Sacramento Stormwater Management Program

# Development Standards Plan

December 1, 2003

***Prepared by:*** County of Sacramento, City of Sacramento, City of Citrus Heights, City of Elk Grove, City of Folsom, City of Galt

***Submitted to:***
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Sacramento Stormwater
Management Program

# Development Standards Plan

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Chapter 1

# Introduction

## Purpose and Organization of the DSP

The Development Standards Plan (DSP) was prepared jointly by the Permittees in the Sacramento Stormwater Management Program: the County of Sacramento and the cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento (Permittees).[1,2] It describes measures to reduce stormwater pollutant discharges from new development and significant redevelopment. The document is required by National Pollutant Discharge Elimination System (NPDES) Stormwater Permit No. CAS082597 (Order R5-2002-0206) (Stormwater Permit) issued to the Permittees in December 2002 by the Central Valley Regional Water Quality Control Board (Regional Board).

The DSP is intended to:

- Describe the status of development in Sacramento County
- Provide an overview of the development review process and describe the various development review tools used to condition projects to include stormwater quality controls
- Describe the development standards currently implemented by the Permittees
- Compare the existing development standards to the requirements of the Stormwater Permit to verify compliance
- Recommend amendments to existing development standards, as needed, to better address the Stormwater Permit requirements
- Describe the proposed implementation process and schedule for amending the standards

The term "development standards" is used throughout this document to refer to the plans, policies, codes and design standards that the Permittees use to review and condition development proposals to include stormwater quality controls.

Following this Introduction, the DSP is organized as follows:

**Chapter 2** – Status of Development and Redevelopment in Sacramento County

**Chapter 3** – Overview of the Development Review Process

**Chapter 4** – Tools of the Development Review Process

**Chapter 5** – Existing Development Standards

**Chapter 6** – Proposed Amendments to Key Development Standards

**Chapter 7** – Proposed Amendments to Other Development Standards

**Chapter 8** – Development Standards Implementation Process

Appendix A includes a glossary of commonly-used terms and acronyms, and the remaining appendices present supplementary or background information.

## Relevant NPDES Permit Requirements

Appendix B outlines the provisions of the Stormwater Permit pertaining to development standards. The Stormwater Permit requires the Permittees to compare their existing development standards to "the requirements established under

[1] The City of Rancho Cordova incorporated in July 2003 but has not yet been named a Permittee by the Regional Board and did not formally participate in the process to prepare the DSP. The City adopted all of the County plans, codes and design standards upon incorporation and the County provides stormwater and drainage service to the City. Therefore, information presented for the County also applies to the City.

[2] The City of Isleton is located within the county but is not a permittee due to low population.

State Water Resources Control Board (State Board) Order WQ 2000-11 and/or other applicable directives." Also, the proposed modifications to the development standards must ensure consistency "with the requirements of State Board Order WQ 2000-11 and [the Stormwater Permit]."

Order WQ 2000-11 specified the contents of Standard Urban Stormwater Mitigation Plans (SUSMPs) to be prepared by agencies in Los Angeles County for controlling stormwater pollution from new and redevelopment. Following the issuance of WQ 2000-11, Craig Wilson of the State Water Resources Control Board (State Board) issued a memorandum, dated December 2001, which required all nine California Regional Boards to include similar language in all new NPDES stormwater permits issued in the state. Hence, the Stormwater Permit issued to the Sacramento Permittees in December 2002 incorporated all applicable language from WQ 2000-11. By complying with the provisions of the Stormwater Permit, the Permittees are addressing all applicable requirements of WQ 2000-11. Appendix C contains a copy of the December 2001 Wilson memorandum.

# DSP Preparation Process

Preparation of the DSP began in January 2003 when the Stormwater Permit became effective. The Permittees decided to collaborate on the effort, since there is a need for consistency in development standards throughout the county. Additionally, although the Stormwater Permit allows the City of Galt to submit its DSP later, Galt opted to proactively join with the other Permittees in submitting the DSP on December 1, 2003.

The following summarizes the work completed to prepare the DSP:

- The Permittees selected a consultant team to conduct studies and prepare several technical memoranda that form the basis of recommendations made in the DSP.
- Each Permittee agency reviewed and assessed its planning policies and procedures, in comparison to the principles recommended by the Stormwater Permit (Provision 16a). A uniform set of tables was used to ensure consistency among the Permittees.
- The Permittee steering committee (County and cities of Folsom and Sacramento) facilitated numerous Permittee coordination meetings throughout the year-long DSP preparation process and coordinated review of the consultants' technical memoranda. In addition, each agency conducted its own in-house meetings with planners and engineers.
- The County made a presentation to the development community regarding the DSP process on behalf of all the Permittees.

# Stakeholder Involvement

## *Permittees*

All six Permittees worked together throughout 2003 to prepare the DSP, as described above. Each agency involved engineers and planners from various departments in the process to review and assess existing development standards. The Permittees will continue to collaborate in 2004 and beyond to amend and implement development standards.

## *Development Community*

The development community (local engineering, construction and development firms) has often mentioned to the Permittees its desire to have the development and stormwater design requirements clearly defined and consistently applied throughout the County. The development community is a key stakeholder in the DSP implementation process.

In March 2003, the County of Sacramento made a presentation to the Sacramento Area Council of the Building Industry Association (BIA) to update the BIA members about the new Stormwater Permit issued in December 2002 and resultant impacts to the local development community (e.g., adoption of amended development standards). About 30 building industry representatives were present. After the meeting, several BIA members expressed an interest in participating in a small working group to meet with the Permittees during the DSP implementation process.

The first meeting with the BIA working group is expected to be held after the DSP is submitted to the Regional Board on December 1, 2003. The purpose of the meeting will be to review the findings and recommendations in the DSP and encourage the BIA to participate in the Regional Board's public review process for the document. Additional meetings may be held with the working group after the DSP is approved by the Regional Board and the Permittees have begun the work of amending development standards. This part of the process will have the greatest impact on the development community, since it will result in code changes and new standards/requirements for development and redevelopment in the Sacramento area.

## *Environmental Community and Interested Parties*

The environmental community and other interested parties will be notified by the Regional Board of the availability of the DSP for public review sometime after the document is submitted on December 1, 2003. Additionally, public notice will be given when each Permittee intends to adopt amendments to its existing general and community plans, codes and/or design standards.

Chapter 2

# Status of Development and Redevelopment in Sacramento County

## Unincorporated Sacramento County

Sacramento County encompasses six cities, including Sacramento, Citrus Heights, Elk Grove, Folsom, Rancho Cordova, and Galt. The unincorporated area is 994 square miles, with a population of approximately 1,258,600, according to the 2000 Census.

The planning environment in which Sacramento County operates has changed dramatically since the adoption of the 1993 *County General Plan*. Three new cities have incorporated — Citrus Heights, Elk Grove and Rancho Cordova — and the older cities of Sacramento and Folsom are looking to expand their Spheres of Influence. The unincorporated area has also witnessed an accelerated development of agricultural land and open space due, in part, to lower than planned residential densities in areas designated for new urban growth.

Sacramento County is in the process of updating its General Plan to help guide growth and development of the unincorporated area through the year 2025. During that process, the County will evaluate the impact from recent incorporations, determine its share of the anticipated regional growth, and evaluate how best to accommodate growth while protecting resources. For example, the County plans to evaluate smart growth principles, include strategies to attract reinvestment in aging communities, and update existing programs, including, but not limited to: air quality, circulation, tree preservation and mitigation, design guidelines, stormwater quality, open space and conservation.

Two Urban Growth Areas have been identified for the unincorporated area:

1) **Florin-Vineyard Gap Project** — a primarily low-density residential area of about 2,000 acres, and a light-industrial area of about 1,000 acres situated east of Highway 99, south of Highway 50 and west of Grant Line Road
2) **Elverta Specific Plan** — about 1,200 acres in northern Sacramento County, with a mix of low density and agricultural-residential land use

The City of Rancho Cordova incorporated on July 1, 2003. However, since the City adopted all of the County plans, codes and standards, the County requirements related to stormwater quality continue to apply to new and redevelopment in the area served by the new city. The population of Rancho Cordova is approximately 53,613 (2000 Census), and the city is approximately 26.417 sq. kilometers. A major development (Sunrise-Douglas Specific Plan) is underway in the City and when complete in several years, will double the City's population.

## City of Sacramento

The City of Sacramento is located near the western edge of the Sacramento metropolitan area, extending eastward from the confluence of the American and Sacramento Rivers to the foothills of the Sierra Nevada Mountains. During the past 20 years, the area has experienced rapid population growth, occurring primarily in the suburban areas lying between the Interstate 80 and Highway 50 corridors. The *City of Sacramento General Plan* covers the present 98 square mile area of the City of Sacramento

The City's population is projected to increase by 21.5 percent from 404,701 in 2000 to 515,502 by 2022. The projected population and household growth in the City will require approximately 47,168 new residential units between 2000 and 2022.

The City of Sacramento is characterized by urban development and well-defined neighborhoods. While vacant and underutilized land is found throughout the developed part of the city, the most substantial residential and commercial infill and redevelopment opportunities occur in the Central City, in outlying older neighborhoods, neighborhood commercial corridors, and near existing and future light rail stations. The Central City, South Sacramento, and North Sacramento community plan areas have the most projected infill housing units of all the plan areas of the City.

New growth areas are located in North Natomas and North Sacramento, Delta Shores and the Cosumnes River areas in the south of the City, the area east of Power Inn Road, the Railyards Special Planning District in the Central City, and the Curtis Park West Railyards site. While all of the new growth areas will generate significant amounts of new development, the North Natomas Community Plan area is projected to account for 35 percent of new housing and 30 percent of new jobs in the City

## City of Citrus Heights

Citrus Heights is located in the northern part of Sacramento County, near the Placer County border. The City's population is almost 90,000 with a land area of just over 14 square miles. Most of the area was developed in the mid to late 1900s and the city incorporated in 1997. Following completion of the Stock Ranch project in 2004, the city will be largely built-out with primarily residential and some commercial land uses and only about 400 acres of developable vacant land. Future projects will be mostly redevelopment and infill construction on vacant or rezoned lots.

## City of Elk Grove

Elk Grove is located in the southern part of the Sacramento metropolitan area west of the Cosumnes River, and is bounded by Calvine Road on the north and Kammerer Road on the south. Elk Grove incorporated in July 2000. In the near future, the City will be annexing the Laguna West area, which will make I-5 the city's westerly boundary. This annexation will bring the total incorporated area to just over 42 square miles with an estimated 2005 population of approximately 120,000.

Tremendous growth is now occurring in Elk Grove, particularly with residential and commercial land uses, and the population is expected to climb to approximately 140,000 by the year 2010. Most of the land within Elk Grove is urban or destined for urban land use in the near future. Development is primarily occurring on the southwest and east sides of the city, and redevelopment is expected in the future in the Old Town Specific Planning Area and various other locations.

## City of Folsom

Folsom is located 22 miles northeast of the City of Sacramento along the Highway 50 corridor in Sacramento County. The 25-square mile city straddles the wooded banks of the American River and includes Folsom Lake and Lake Natoma within its boundaries. Possible future annexation plans include the land south of Highway 50, currently included in unincorporated Sacramento County. Most of the new development in the city has occurred since 1990, when the city began expanding out from its historic location along the American River.

The population of Folsom was almost 57,000 in 2003 and is expected to reach about 70,000 by the year 2009. The city's large land areas are currently being developed on the hilly east side of the city in the Empire Ranch and Broadstone projects. Land use here is predominantly single family residential homes, with a few associated commercial retail centers. A new college is also being constructed on the east side of town. Infill development is occurring in several areas throughout the city, including the American River Canyon area north of the river.

## City of Galt

Galt is a growing community located in Sacramento County about 30 miles south of the City of Sacramento. The city is surrounded by extensive agriculture (mainly dairy and feed crop). The greatest use of land in Galt is for residential purposes. The current population is about 22,300 with a projected population of 30,000 at build-out of the current City limits. Seven percent of the city is designated as industrial with a minimal but growing number of industries. Commercial uses encompass 15 percent. Currently, approximately four square miles of the city are developed and future development will expand this to about five square miles. New development is occurring primarily in the northeast and southern portions of the City, while a relatively small amount of infill and redevelopment will likely continue in the western section of the City.

## Chapter 3

# Overview of the Development Review Process

Figure 3–1 is a flowchart showing the typical steps used by each Permittee agency to review and approve development proposals that require City Council/County Board of Supervisors approval. City Council/Board approval is required whenever a development project requires a discretionary entitlement such as a rezone, a tentative subdivision map, or a variance. Various departments within each Permittee agency review such projects and prepare a set of conditions of approval that include stormwater quality requirements, for consideration by the Council/Board.

When a project is proposed, the planners in each Permittee agency generally have the first contact with design professionals representing the developer. This initial consultation about site layout and design is an ideal place to begin thinking about stormwater quality protection, and whether stormwater quality facilities will be provided at the project site or mitigation will be required.

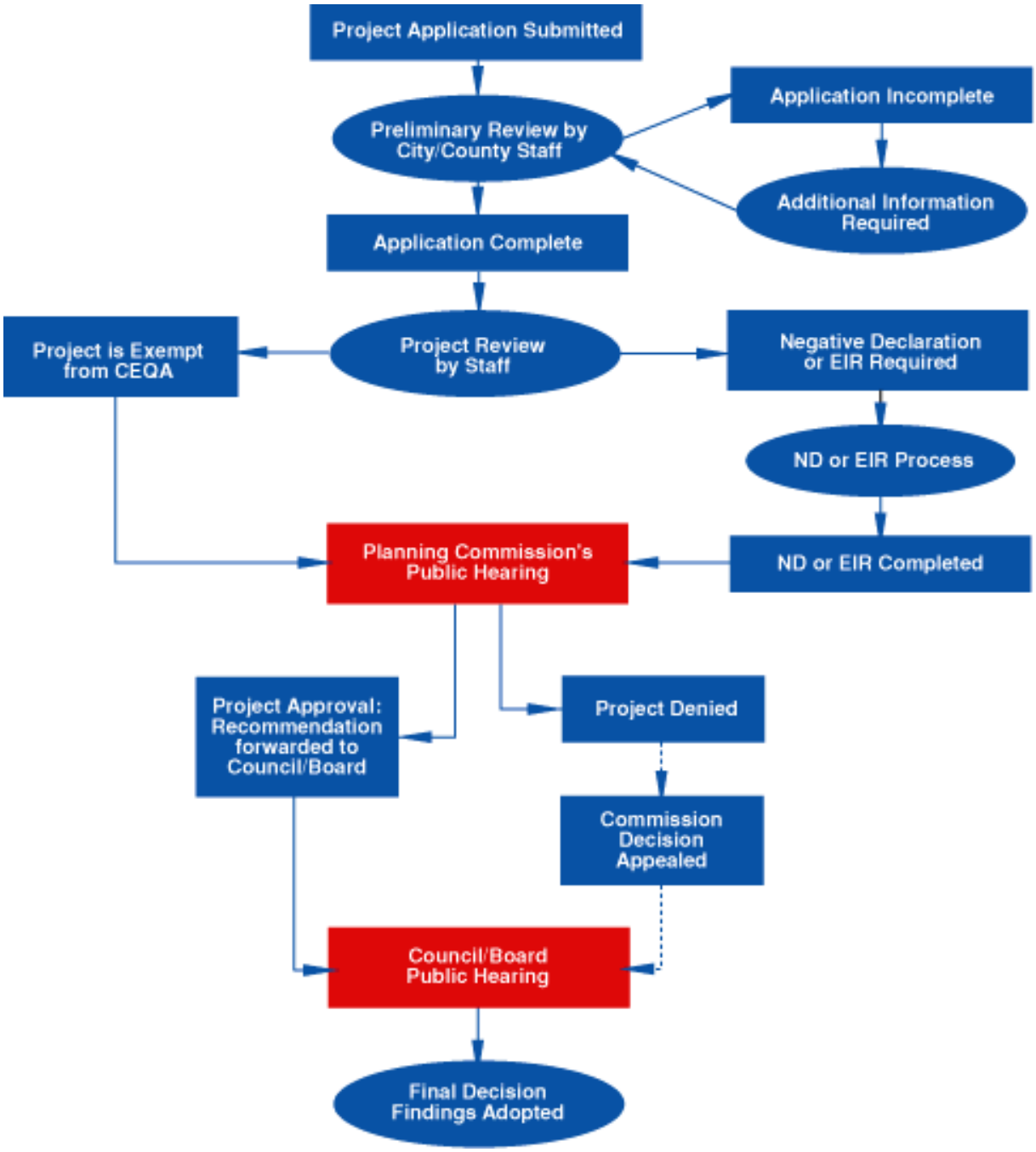
After a developer has applied to proceed with the project, agency staff rely on routing lists, checklists and guidance materials to help them complete the various steps shown in Figure 3–1. For example, planners or environmental analysts in each agency use an "Initial Study Checklist" as the first step in the California Environmental Quality Act (CEQA) environmental review process for projects requiring such a review. The checklist is discussed more in the next chapter.

Once the permit application is complete, the project information is routed to various agency departments and staff for review. The staff place conditions on the project as needed utilizing a set of standard conditions, including one or more standard conditions that apply to protection of water quality. The agencies also conduct mandatory technical review meetings and subdivision review committee meetings to identify any technical, environmental, ordinance or code problems and to finalize the appropriate standard conditions of approval for the project. Additional special conditions of approval may be imposed based on the findings in these meetings. As a result of the environmental review, many projects will have mitigation, monitoring and reporting plans (MMRPs) in which specific mitigation requirements and responsible implementing entities are identified.

When the project has obtained the necessary entitlement and moved into the permitting phase, plan check staff from each agency ensure that all the conditions of approval and those specified in the MMRP are satisfied.

Certain projects — such as those just requiring a building permit — do not need Council/Board approval (ad ministerial projects). The process shown in Figure 3–1 does not apply to these projects. However, plan check staff in each agency review these projects for conformance with applicable stormwater quality requirements outlined in agency codes, improvement standards and/or design and procedures manuals.

**Figure 3–1. Typical Development Project Flow Chart**




*Legend: CEQA: California Environmental Quality Act; ND: Negative Declaration; EIR: Environmental Impact Report.*
*Note: Legal procedures may vary. Negative declaration and EIR documents vary in processing time.*
*Source: Figure 1 from "The Planning Commissioner's Book", Governor's Office of Planning and Research, May 1998.*

Chapter 4

# Tools of the Development Review Process

The Permittees use three levels of tools to oversee development and redevelopment:

- Plans, policies and review procedures
- Ordinances and codes
- Design standards and guidelines

Plans and policies present an overall community vision. The Permittees implement that vision by adopting codes which establish the local regulation/law. Following this, the agencies publish design/improvement standards and guidelines that lay out the additional design and engineering requirements that the development community must follow. This chapter discusses each of these levels of tools and focuses on their general application with respect to minimizing the effects of development on stormwater pollution and receiving water quality.

The requirements of the Stormwater Permit are primarily implemented through the third level of development tools — the design standards and guidelines, and those are the focus of this document. However, since the Permit also requires a review of plans and codes, those are discussed as well.

## Plans, Policies and Review Procedures

### *General Plan*

The General Plan is a community's blueprint for future development. It is adopted by the City Council or County Board of Supervisors and forms the basis for future land use decisions in the jurisdiction. A General Plan consists of at least two parts. There is written text describing the community's goals, objectives and policies toward development. There are also maps illustrating the generalized distribution of land uses, municipal service improvements (e.g., roads) and open space. California law requires that the General Plan contain several elements addressing a set of basic planning issues. Watershed protection and water quality and quantity management principles and policies are typically included in one or more of the following elements:

- Land Use Element
- Conservation Element
- Open Space Element

Each of the Permittees has an adopted General Plan, which will be amended to reflect water quality principles as needed during the next update process, as described in Chapter 7.

### *Community and Specific Plans*

Community Plans and Specific Plans provide direction for a community, portions of jurisdictions, or other defined geographic areas. These plans help implement an agency's General Plan on an area-specific basis and reflect the needs and constraints of that area. The plans typically set forth policy and implementation strategies for such items as land use, transportation, urban design, parks, school facilities, and public services. Environmental considerations unique to the designated area (e.g., protection strategies for a creek traversing the area) could also be defined in the plans. A Community Plan for a developed, mature area might focus on neighborhood enhancement and commercial revitalization goals and action items and infrastructure financing. A Specific Plan or Community Plan for an area that is newly developing would focus more on new development needs, location of new public facilities and infrastructure financing.

### *Natural/Scenic Area Protection Plans*

Several of the Permittees have adopted plans to provide policy direction for resource conservation, recreation use and development within a

designated natural, riparian or scenic area. These plans may get incorporated into an agency's General Plan. For example, the City of Folsom has adopted the Humbug/Willow Creek Parkway Plan, and the City and County of Sacramento collaborated on the creation of the American River Parkway Plan and the associated River Corridor Management Plan. Another example is the Natomas Joint Vision, in which the City and County are developing an agricultural/open space and resource conservation plan.

## *Parks and Trails Master Plans*

All of the Permittees have master plans adopted by various agencies and parks districts with jurisdiction within their municipal boundaries. Many times, existing and proposed parks and trails are adjacent to creeks and other natural areas that provide water quality and habitat values.

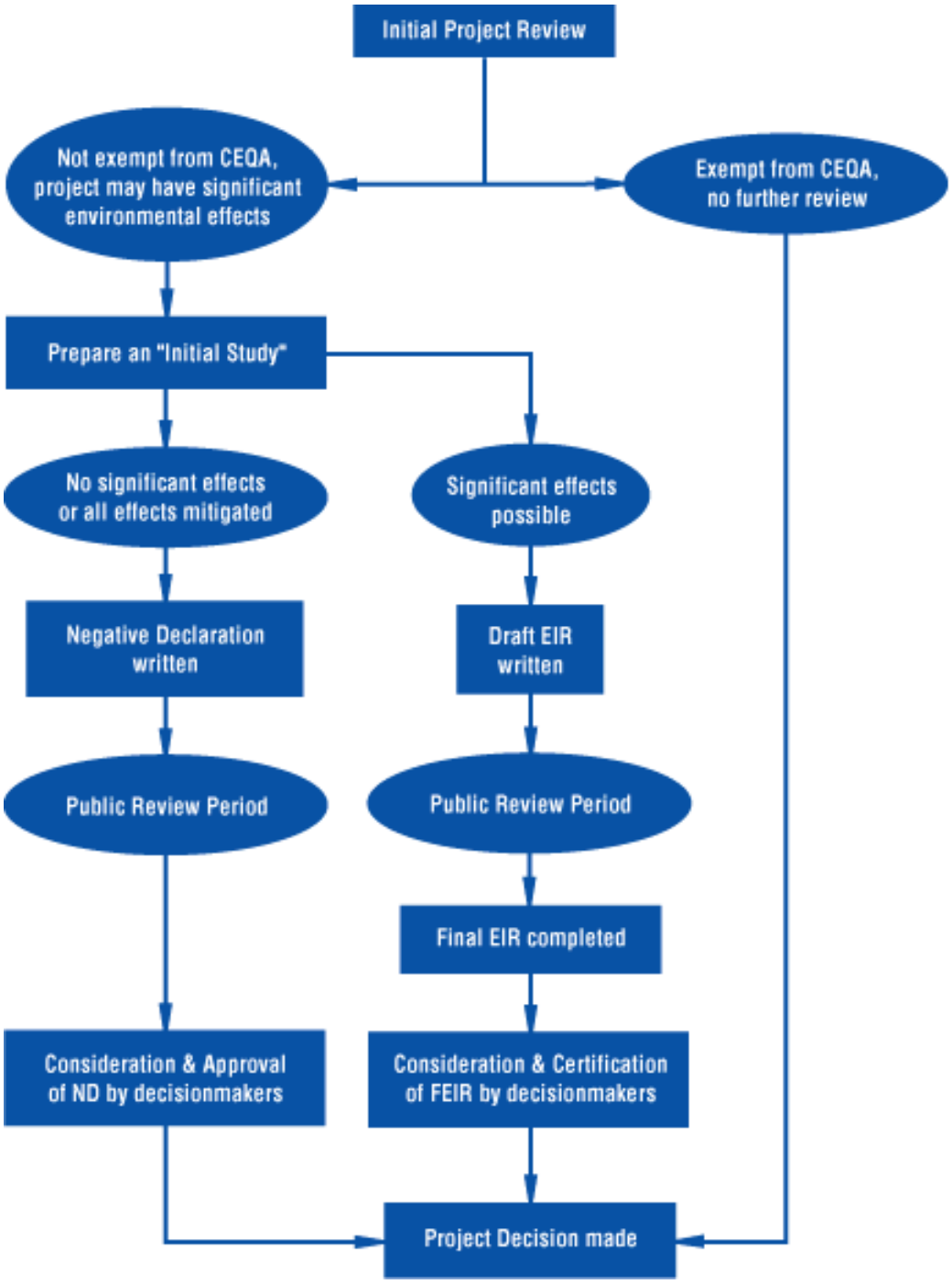
## *Drainage Master Plans*

Drainage master plans are prepared by the Permittees for watersheds or specific planning areas that will be developed in the near future. Additionally, some Permittees (e.g., Citrus Heights and Folsom) are planning to prepare city-wide drainage master plans. The master planning process involves conducting hydrologic and hydraulic computer modeling to ensure that the existing or planned drainage features provide an appropriate level of service and flood protection for existing and future communities. In recent years, due to evolving environmental regulations and community interest, the focus of drainage master plans has expanded to include protection, enhancement and/or creation of water quality, habitat, recreational and visual values. In developed/established areas, the master planning process can help identify problem areas in creeks (e.g., erosion prone areas and areas with poor water quality or aesthetics), potential sources of these problems, and proposed projects to alleviate problems.

## *California Environmental Quality Act (CEQA) Review Procedures*

CEQA requires local and state governments to consider the potential environmental effects of a project before making a decision on it. CEQA's purpose is to disclose the potential impacts of a project, suggest methods to minimize those impacts, and when an Environmental Impact Report (EIR) is prepared, discuss project alternatives so that decision makers will have full information upon which to base their decision. Figure 4–1 is a simplified CEQA flowchart outlining the steps in the process, including the types of environmental documents that might be generated for a project. The planners in the public agencies use various tools, including an "Initial Study Checklist" to verify that they have considered all the potential environmental impacts of a project. The checklist generally includes one or more items related to protection of natural watercourses and associated water quality and habitat. The initial study process allows planners and project applicants to discuss potential water quality impacts and probable mitigation measures.

**Figure 4–1. Simplified CEQA Flow Chart**




*Legend: CEQA: California Environmental Quality Act; ND: Negative Declaration; EIR: Environmental Impact Report.*
*Source: Figure 2 from "The Planning Commissioner's Book", Governor's Office of Planning and Research, May 1998.*

# Ordinances and Codes

The development community is required to follow local codes when developing or redeveloping land. The Permittees established and regularly amend their municipal codes by adopting ordinances. The Permittees have adopted several types of ordinances that indirectly or directly address water quality and watershed protection. The following example ordinances and codes are discussed in this section:

- Zoning
- Stormwater Quality and Discharge Control
- Erosion and Sediment Control
- Water Conservation
- Tree Preservation/Parking Lot Shading
- Hillside Protection
- Habitat Management/Conservation

## *Zoning Ordinance/Code*

Whereas the General Plan describes land use in a broad sense, the zoning ordinance more specifically spells out the zone classification and associated allowable uses for each piece of property within the community. For each zone classification, standards such as minimum lot size, maximum building height, building setbacks and maximum lot coverage are specified. Before a building permit can be issued, the project proponent must demonstrate that the proposal complies with the applicable zoning requirements.

Zoning codes may contain requirements that directly promote water quality protection. For example, a zoning code may designate natural stream buffers, open spaces or erosion-prone areas that need special protection. Zoning codes can also indirectly affect water quality; for example, limits on lot coverage result in more vegetated areas to infiltrate and filter runoff and less impervious surface.

Conflicts may exist between zoning codes and the objectives of water quality treatment. For example, landscape requirements for parking lots might make it difficult to allow vegetated swales in the landscape areas between parked cars.

## *Stormwater Quality and Discharge Control Ordinance*

Since the start of the Sacramento Stormwater Management Program in 1990, each Permittee has adopted a stormwater quality control ordinance. Such an ordinance typically:

- Describes/defines the municipal storm drain system covered by the ordinance
- Defines what is a "pollutant" and prohibits pollutants from entering the municipal storm drain system
- Provides authority to the municipality to pursue enforcement action against and issue fines to dischargers found in violation of the ordinance
- Authorizes the municipality to set requirements for stormwater quality control for construction and development projects and/or other regulated communities (e.g., industrial facilities)

## *Erosion and Sediment Control Ordinance*

All of the Permittees regulate land grading and require erosion and sediment control during construction to minimize damage to surrounding property and public rights-of-way, water quality degradation, and disruption of natural drainage flows. Grading and erosion/sediment control ordinances establish administrative procedures, minimum standards of review, and implementation and enforcement procedures for controlling erosion, sedimentation and other pollutant runoff associated with construction.

## *Other Ordinances*

Depending on their unique circumstances, the Permittees have adopted additional ordinances that directly or indirectly address the potential water quality impacts of development. Implementation of these ordinances may promote water quality protection or pose a conflict with stormwater quality requirements. Here are some examples; see Chapter 5 and Appendix D for more details:

- *Water Conservation Ordinances* define standards and procedures for designing,

installing and managing landscapes to avoid high water demands and better withstand drought. Water conservation ordinances can benefit water quality, since they typically result in reduced runoff and less use of pesticides and fertilizers. However, such ordinances can also pose a conflict, where vegetated stormwater quality facilities require the use of extensive grass/turf for water quality treatment.

- *Tree Preservation/Parking Lot Shading Ordinances* recognize the values of trees (e.g., historical heritage values) and establish standards and measures for protecting them. While not mentioned in all tree preservation ordinances, trees also provide water quality benefits such as reduced surface runoff temperatures due to canopy shading, and filtration and adsorption of rain water and runoff to remove pollutants. (This benefit is recognized in the City of Sacramento's Parking Lot Shading Ordinance.)
- *Hillside Development Ordinances* are primarily intended to promote public safety and protect property against losses from erosion, ground movement and flooding, but can also protect significant natural features and prevent eroded materials from being discharged to the municipal storm drain system and receiving waters.
- *Wetland and Riparian Habitat Management or Conservation Ordinances* recognize the value of natural wetlands and riparian habitats and protect them from damage due to development or other land use activities.

# Design Standards and Guidelines

Design standards and guidelines help ensure that the components of the public infrastructure (e.g., roads, drainage and sewer utilities, parks, public buildings) are designed and constructed consistently and of the highest quality.

## *Design Standards*

The Permittees have published improvement standards or design/procedures manuals specifying design requirements for the public drainage infrastructure, including post-construction stormwater quality BMPs. For example, the County and cities of Elk Grove and Citrus Heights use the same set of improvement standards which Galt also uses, the City of Sacramento has its *Utilities Procedures Manual,* and Folsom has its *Design and Procedure Manual and Improvement Standards* document. In addition, the City and County of Sacramento published two documents that include design standards and criteria for stormwater quality BMPs: 1) *Volume 2: Hydrology Standards of the City and County of Sacramento Drainage Manual (Hydrology Standards*), and 2) the *Guidance Manual for On-Site Stormwater Quality Control Measures* (*On-Site Manual*).

The *Volume 2* document addresses design of regional SWQ BMPs which serve large areas (typically 20-1600 acres), are located in the public right-of-way, and are owned, operated, and maintained by public agencies.

The *On-Site Manual* includes design information for on-site SWQ BMPs that each serve a particular project or site.

The *On-Site Manual* is implemented to various degrees by all the Permittees and includes information for both on-site source and treatment stormwater quality BMPs accepted for use in the Sacramento area. Source control BMPs are preventive practices or methods to control pollutants at their source and prevent pollutants from contacting Stormwater run-on or runoff. Treatment control BMPs are engineered systems or devices designed to remove pollutants from stormwater runoff through various means (e.g.; gravity settling, filtration, biological uptake).

Source control fact sheets are provided for such activities as waste handling, unloading/loading and fuel dispensing. The treatment controls currently addressed by the *On-Site Manual* include: vegetated swales and grass filter strips, sand filters, infiltration trenches and basins, and porous paving blocks. The *On-Site Manual* is discussed in more detail in subsequent chapters.

## *Design Guidelines*

Several Permittees have elected to publish design guidelines for certain types of development. These include concepts and principles for planning and site design that primarily influence the aesthetics and livability of an area. Water quality protection principles can be integrated into such design guidelines. For example, this would be an ideal place to emphasize the need for designs that minimize impervious surfaces by protecting/adding vegetative areas and/or permeable pavement surfaces.

Chapter 5

# Existing Development Standards

## Development Standards Review Process

As part of the process to prepare the DSP, the planners and engineers in each Permittee agency compiled and reviewed the existing development standards used by their agency that are directly or indirectly related to water quality and watershed protection. This entailed reviewing plans and policies (such as the General Plan), codes and ordinances and design standards. In addition, a team of experienced engineering and planning consultants was hired to help with the planning review process by conducting engineering analyses and technical reviews related to stormwater best management practices (BMPs) and numerical sizing criteria for the BMPs.

The review was conducted to:

- Determine if the Permittees' current approach to managing stormwater quality impacts from development is consistent with the Stormwater Permit requirements
- Identify any policies, codes or standards that conflict with stormwater quality protection objectives
- Make initial recommendations to strengthen or update the existing policies, codes or standards if necessary

This chapter and Appendix D describe how the Permittees' current approach compares to the Stormwater Permit requirements; proposed amendments are described in Chapter 6. This chapter focuses primarily on the *City and County of Sacramento Guidance Manual for On-Site Stormwater Quality Control Measures (On-Site Manual*), since that document contains most of the stormwater quality control information and requirements. Due to its name, it is perhaps not clear that the *On-Site Manual* is not only used by the City and County of Sacramento, but by all the Permittees. Also, the word "guidance" is misleading and has created a situation where some of the Permittees are implementing the manual more comprehensively than others. The Permittees intend to make changes — such as changing the name of the document — to address these issues, as discussed in Chapter 6.

## Comparison of Existing Development Standards to Stormwater Permit Requirements

### *Water Quality and Watershed Protection Principles (Provision 16a)*

Stormwater Permit Provision 16a lists a set of eight water quality and watershed protection principles that each Permittee should consider in its General Plan and other documents. Appendix D provides a summary of how each Permittee's existing planning/development review documents relate to those principles. In general, most of the Permittees already address the principles to some degree, but some feel that their policies, plans and codes could be strengthened or updated. Appendix E contains a proposed menu of tools that each Permittee could consider and refer to in the near future to help strengthen and update its plans and policies where needed. This menu was prepared by experienced planning and site design consultants based on input obtained during a Permittee workshop held in August 2003.

### *Priority Development Project Categories (Provision 19a)*

#### Stormwater Permit Requirements

Stormwater Permit Provision 19a lists eight priority development/redevelopment project categories (based on land use and project size) for which — per Provision 19b — this DSP should recommend source and/or treatment control BMPs/requirements. The permit language for Provisions 19a and b can be found in Appendix B and is summarized throughout this section.

**Permittees' Existing Requirements Related to Priority Project Categories and Comparison to Permit**

The *On-Site Manual* used by the Permittees already outlines stormwater quality control requirements for various land uses. Specifically, Table 2–1 in the *On-Site Manual* outlines how various types of projects (based on generalized land use) should incorporate stormwater quality source and treatment controls. The land use categories in Table 2–1 relate to (but are not identical to) the priority project categories identified in Permit Provision 19a, as discussed below for each of the categories.

The *On-Site Manual* applies to both redevelopment and new development projects, and the requirements are the same for both. However, the *On-Site Manual* does not define redevelopment in the same way as the Stormwater Permit. Right now, each Permittee is free to interpret the term as they choose and there is likely inconsistency between the agencies.

**Residential: Single Family Home Subdivisions (Permit Provision 19a.i)**

Permit Provision 19a.i defines residential subdivisions of ten units or more as a priority project category, subject to source and/or treatment control BMPs. Table 2–1 in the *On-Site Manual* includes categories for single family and multi-family residential land uses, whereas the Stormwater Permit does not distinguish between the two. The Permittees believe it is important to maintain the distinction, since pollution prevention and BMP strategies for multi-family can be different than for single family development.

The Permittees already require source controls (e.g., "No Dumping-Drains to Creek/River" message stamped on new drain inlets) for ***all*** single family residential subdivisions, and require treatment controls for certain ones. The manual requires new single family residential subdivisions over 100 acres to include one or more regional controls (e.g., water quality detention basins) for treating runoff. However, in some cases, some permittees have gone beyond this level by requiring detention basins to serve smaller areas. The local agencies can require additional regional or on-site treatment controls for subdivisions, beyond what is required in the *On-Site Manual*.

Table 2–1 in the *On-Site Manual* bases the trigger for requiring regional BMPs (e.g., detention basins) on the gross size of a project, not on the number of lots. (As stated previously, the Stormwater Permit's trigger is ten or more lots). Gross size is probably a better trigger in Sacramento County, due to the variations in lot sizes, particularly with rural agricultural land uses (single family residential lots of 1, 2 and 5 acres each) in the eastern part of the county.

**Residential: Multi-Family Development (Permit Provision 19a.i)**

The Permittees already condition all multi-family developments — not just those with 10 or more units as required by the permit — to include at least source control BMPs. The *On-Site Manual* specifies that if a multi-family project's gross area is less than one acre, or its runoff is treated in a regional facility (e.g., detention basin), source control BMPs are required for the project. If no regional treatment is provided and the project's gross area is one acre or more, than an effective combination of source and treatment controls is required. The *On-Site Manual* includes three source control fact sheets in Section 3 applicable to multi-family residential projects: 1) storm drain inlet marking, 2) waste handling, and 3) vehicle washing.

**Commercial Developments (Permit Provision 19a.ii)**

Stormwater Permit Provision 19a.ii identifies commercial projects with 100,000 square feet or more of impervious surface as requiring stormwater quality source and/or treatment control BMPs. Currently, the Permittees meet or exceed this threshold for requiring stormwater quality BMPs on commercial projects. The *On-Site Manual* specifies that if the project has less than one acre of impervious area (less roof tops) or the runoff is treated in a regional facility (e.g., detention basin), only source control BMPs are required for the project. However, the permitting agency can require additional on-site treatment if warranted. If no regional treatment is provided and the commercial project has one acre or greater of impervious surface (less roof tops), than an effective combination of source and treatment

controls is required. The *On-Site Manual* includes several source control fact sheets in Section 3 applicable to commercial projects.

There are two differences in the way that the *On-Site Manual* addresses commercial projects vs. the Stormwater Permit, as follows:

- Table 2–1 does not identify requirements for specific types of commercial and industrial land uses (e.g., automotive repair shops, retail gasoline outlets), as the Stormwater permit does.
- Table 2–1 in the *On-Site Manual* excludes rooftop runoff from the calculation of impervious area for commercial and industrial land uses. This was done assuming that rooftop runoff was not a significant source of pollutants.

**Automotive Repair Shops (Permit Provision 19a.iii)**

Stormwater Permit Provision 19a.iii defines automotive repair shops with 5,000 square feet or more impervious surface as a priority category warranting source and/or treatment control BMPs. The *On-Site Manual* doesn't specifically list auto repair shops, but such projects would be considered commercial projects, subject to the requirements described above. The *On-Site Manual* includes three source control fact sheets in Section 3 applicable to activities which might take place at an auto repair shop: 1) storm drain inlet marking, 2) vehicle and equipment fueling, and 3) vehicle and equipment maintenance, repair and washing.

**Restaurants (Permit Provision 19a.iv)**

Permit Provision 19a.iv defines restaurants with 5,000 square feet or more impervious surface as a category warranting source and/or treatment control BMPs. The *On-Site Manual* doesn't specifically list restaurants, but such projects would be considered commercial projects, subject to the requirements described earlier for such projects. The *On-Site Manual* includes three source control fact sheets in Section 3 applicable to activities typically taking place at a restaurant: 1) storm drain inlet marking, 2) outdoor loading/unloading, and 3) waste handling.

**Hillside Developments (Permit Provision 19a.v)**

Developments with 5,000 square feet or more of impervious surface that are located in erosion prone areas with slopes 25 percent or greater are considered a category warranting source and/or treatment control BMPs. The City of Folsom is the only permittee affected by this requirement and has already complied with it through their Hillside Development Ordinance (Folsom City Code, Chapter 14.33). The ordinance applies to all projects, regardless of size and impervious area, in a designated (mapped) part of the community determined to have steep slopes and high erosion potential. This includes all areas of the city with slopes 25 percent or greater.

**Parking Lots (Permit Provision 19a.vi)**

Permit Provision 19a.vi defines parking lots that are exposed to rainfall of 5,000 square feet or more, or 25 or more parking spaces, as a category subject to source and/or treatment control BMPs. The *On-Site Manual* doesn't have a separate category for parking lots. Parking lots that are associated with multi-family residential, commercial and industrial projects would include stormwater quality source and/or treatment control BMPs as required for the respective land use type, as explained above. Following these requirements, all parking lots would at least include source control BMPs, such as "No Dumping—Drains to Creek/River" message stamped on new drain inlets. However, on-site treatment control BMPs (e.g., vegetated swales) would not typically be required unless the multi-family residential project is one acre or more in total size, or the commercial/industrial project has one or more acres of impervious surfaces, minus roof tops. The *On-Site Manual* does not address stand-alone parking lots that are not associated with residential, commercial or industrial buildings/projects.

**Streets, Roads, Highways and Freeways (Permit Provision 19a.vii)**

Permit Provision 19a.vii defines streets, roads, highways and freeways with paved surfaces five acres or greater (hereinafter "roads") as another priority project category subject to source and/or treatment control BMPs. The Permittees do not have jurisdiction over freeways; these transportation corridors are addressed by Caltrans'

NPDES stormwater permit. The Permittees are partially addressing this category with respect to roads over which they have jurisdiction. Runoff from roads that are part of new residential and commercial subdivisions is typically treated in a regional facility such as a water quality detention basin, but other road runoff is probably not being treated. There are currently no requirements for treating runoff from transportation redevelopment projects (e.g., road widening).

**Retail Gasoline Outlets (RGOs) (Permit Provision 19a.viii, 19b)**

RGOs with an impervious area of 5,000 square feet or more are the final priority project category subject to stormwater BMPs (Provisions 19a.viii). Permit provision 19b specifies that at a minimum, RGOs must be required to use the BMPs listed in the *BMP Guide for Retail Gasoline Outlets*, published by the California Stormwater Quality Task Force (now known as the California Association of Stormwater Quality Agencies) in March 1997.

The *On-Site Manual* does not specifically list RGOs, but an RGO would be considered a commercial project and the requirements noted above for commercial development would apply. The *On-Site Manual* includes two source control fact sheets in Section 3 applicable to activities typically taking place at RGOs: 1) vehicle and equipment fueling, and 2) vehicle and equipment maintenance, repair and washing. The fueling fact sheet incorporates the BMPs included in the *BMP Guide for Retail Gasoline Outlets*, referenced earlier.

## *BMP Requirements (Provision 19b/e)*

**Stormwater Permit Requirements**

Stormwater Permit Provision 19b requires the DSP to include a list of recommended source and/or structural treatment control BMPs for all new development and significant redevelopment projects falling under the above priority project categories. At a minimum, RGOs are required to use the BMPs listed in the California Storm Water Quality Task Force, March 1997 *BMP Guide for Retail Gasoline Outlets.*

A related Permit Provision (19e) requires the DSP to consider pollutants of concern or activities of concern in identifying appropriate BMPs for new development or significant redevelopment projects. In selecting BMPs, the following need to be considered: (1) the target pollutants; (2) land use and pollutants associated with that land use type; (3) pollutants expected to be present on site at concentrations that would pose potential water quality concerns; and (4) changes in flow rates and volumes resulting from the development project and sensitivity of receiving waters to changes in flow rates and volumes.

**Existing BMP Requirements**

Since the mid 1990s, the Permittees have conditioned various projects to include stormwater quality source and treatment control BMPs. Stormwater treatment control BMPs include regional facilities such as detention basins and on-site BMPs such as vegetated swales. Developers in most newly developing areas have been required to construct regional water quality detention basins to capture and treat the runoff from drainage areas ranging from about 20 to 600 acres in size.

On-site treatment control BMPs are required for certain developments per Table 2–1 of the *On-Site Manual* and as discussed previously in this chapter in the section on Priority Development Project Categories. Section 4 of the *On-Site Manual* outlines criteria for selection, design, installation and maintenance of the following structural stormwater quality treatment BMPs:

- Vegetated swale and filter strip
- Sand filter (3 types)
- Infiltration basin and trench
- Porous paving blocks

In addition, certain proprietary stormwater quality BMPs have been installed in a limited fashion in various parts of the county since the mid 1990's. Several years ago, with increasing pressure from manufacturers to allow more widespread use of proprietary devices in Sacramento, the Permittees initiated a multi-year investigative study to determine if field data were available to justify pollutant removal performance claims. The results of the initial study were presented in the report entitled *Investigation of Structural Control Measures for New Development, November 1999.*

At the time of publication of the *On-Site Manual* in January 2000, none of the proprietary devices studied had met the study performance criteria protocol for acceptance in Sacramento. However, the City and County of Sacramento did include general information for proprietary BMPs in Section 4 of the *On-Site Manual.* The manual states: *"Alternative technologies that provide equivalent treatment are encouraged but may result in additional time for agency review and approval unless coordinated in advance with the [agency's] stormwater staff"*. In addition, a general fact sheet is provided for "Alternative and Proprietary Control Measures" in the *On-Site Manual.*

The results of the ongoing investigation study to date have shown that only one proprietary device conforms to the performance criteria protocol established by the Permittees in the November 1999 report. Therefore, the Permittees are allowing proprietary devices that have not been approved only for small drainage areas/sites where it is infeasible to install another type of treatment control BMP described in the *On-Site Manual*. Additionally, the Permittees require or recommend one or more of the following conditions for new proprietary devices:

- Regular maintenance should be performed to help ensure pollutant removal effectiveness.
- A maintenance agreement must be signed by the property owner and recorded with the deed for the property.
- Monitoring must be conducted by the manufacturer and/or the property owner to demonstrate effectiveness after installation.

Some Permittees are more stringent with these requirements than others. The goal is to add proprietary BMPs to the *On-Site Manual* as they are approved.

Table 5–1 shows the estimated number of various types of stormwater treatment BMPs constructed in the county through November 2003. The table does not include facilities that have been approved but not yet constructed.

The Permittees have been requiring source control BMPs for development projects for several years. Guidance for source control BMPs is provided through a series of fact sheets in Section 3 of the *On-Site Manual*; these fact sheets already incorporate the RGO BMPs from the 1997 BMP Guide as required by the Stormwater Permit. Table 5–2 summarizes how various land uses are addressed by the fact sheets.

## Table 5–1. Inventory of Existing Stormwater Quality Treatment BMPs in Sacramento County

| BMP Type | Sac County and Rancho Cordova* | Sac City | Citrus Heights | Elk Grove** | Folsom | Galt | Total |
|---|---|---|---|---|---|---|---|
| **Regional BMPs** | | | | | | | |
| Dry Extended Detention WQ Basin | 2 | 14 | 0 | 10 | 5 | 1 | **32** |
| Wet Detention Water Quality Basin | 4 | 10 | 1 | 1 | 31 | 2 | **49** |
| Multi Functional Drainage Channel | 1 | 0 | 0 | 1 | 0 | 0 | **2** |
| **On-Site BMPs** | | | | | | | |
| Vegetated Swale | 1 | 62 | 0 | 6 | 5 | 1 | **75** |
| Vegetated Filter Strip | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Sand Filter | 1 | 2 | 0 | 0 | 0 | 0 | **3** |
| Infiltration Trench | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Infiltration Basin | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| Porous Paving Blocks | 0 | 2 | 0 | 0 | 0 | 1 | **3** |
| Other Pervious Pavement | 5 | 0 | 0 | 0 | 0 | 0 | **5** |
| Water Quality Detention Basin | 0 | 2 | 0 | 0 | 7 | 0 | **9** |
| **Proprietary On-Site BMPs*** ** | | | | | | | |
| Wet Vault | 0 | 15 | 4 | 26 | 32 | 7 | **84** |
| Swirl Concentrator | 2 | 0 | 0 | 1 | 2 | 0 | **5** |
| Deflection Screen | 0 | 2 | 0 | 11 | 0 | 0 | **13** |
| Media Filter | 2 | 0 | 0 | 2 | 0 | 0 | **4** |
| Drain Filter Insert | 2 | 8 | 0 | 0 | 22 | 0 | **32** |
| Combined System | 0 | 0 | 0 | 0 | 0 | 0 | **0** |

*Note: In some cases, numbers given are approximate. Numbers given are number of projects/sites (not number of BMPs) with existing, installed BMPs as of November 2003.*

**The numbers are combined for the two agencies since the County provides stormwater/drainage services to Rancho Cordova.*

***Many of the BMPs were constructed (or projects were conditioned) by the County prior to Elk Grove incorporation in 2000.*

****The categories shown match those in the report entitled:* Investigation of Structural Control Measures for New Development, November 1999.

## Table 5–2. Source Control BMPs Utilized in Sacramento County

| | Source Control BMPs* | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Type/Activity** | **Paving—Impervious** | **Paving—Compatible w\ Materials Handled** | **Covers, Roofs & Enclosures** | **Grading/Berms—Run-on Prevention** | **Grading—Stormwater & Spill Containment** | **Sanitary Sewer Discharge** | **Emergency Storm Drain Seal** | **Overflow Protection** | **Educational Signs** | **Covered/Sealed Trash Receptacles** | **Storm Drain Message** |
| **Commercial/Industrial** | | | | | | | | | | | ✓ |
| Material Storage | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Outdoor Material Loading/Unloading | ✓ | ✓ | ✓ | ✓ | | | ✓ | | | | |
| Vehicle & Equipment Fueling | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| Vehicle & Equipment Maint, Repair, & Washing | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| Outdoor Process Equipment Operations & Maintenance | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Waste Handling | ✓ | | ✓ | ✓ | ✓ | ✓ | | | ✓ | | |
| **Multi-Family Residential** | | | | | | | | | | | ✓ |
| Vehicle Wash Areas | ✓ | | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | |
| Waste Handling Areas | ✓ | | ✓ | ✓ | ✓ | | | | ✓ | ✓ | |
| **Single Family Residential** | | | | | | | | | | | ✓ |

**Fact sheets for these source control BMPs (control measures) are included in Section 3 of the* Guidance Manual for On-Site Stormwater Quality Control Measures*, published in January 2000.*

**Comparison of Existing BMP Requirements with Stormwater Permit Requirements**

The Permittees generally satisfy Stormwater Permit Provision 19b, as described above. They already require source and/or treatment control BMPs for the priority development project categories with the exception of parking lots and some road improvement projects. Stormwater Permit Provision 19e, which requires the DSP to consider pollutants of concern or activities of concern in identifying appropriate BMPs for new development or significant redevelopment projects, is also addressed, but needs clarification.

The source and treatment control BMPs included in the manual were selected based on consideration of pollutants, land uses and activities of concerns. Also, Section 4 of the *On-Site Manual* includes general information about pollutants addressed by each type of treatment control BMP. However, the manual does not explicitly associate land uses and activities of concern with the pollutants of concern for each BMP. For this reason, the Permittees prepared a conceptual BMP matrix to fully address Permit Provisions 19b and e; this matrix is presented in Chapter 6. The intent is to include a matrix similar to this in the updated *On-Site Manual*, as discussed later in Chapter 6.

## *Numeric Sizing Criteria for Stormwater Treatment BMPs (Provisions 19c/d)*

**Stormwater Permit Requirements**

Stormwater Permit Provision 19c requires the Permittees to review their existing design standards for stormwater quality treatment control BMPs and determine if they are comparable to the following sizing criteria:

i. Volume-based BMPs shall be designed to mitigate (infiltrate or treat) either:

   a) The volume of runoff produced from a 24-hour 85th percentile storm event, as determined from the local historical rainfall record; *or*

   b) The volume of runoff produced by the 85th percentile 24-hour rainfall event, determined as the maximized capture storm water volume for the area, from the formula recommended in Urban Runoff Quality Management, Water Environment Federation (WEF) Manual of Practice No. 23/American Society of Engineers (ASCE) Manual of Practice No. 87, (1998); *or*

   c) The volume of annual runoff based on unit basin storage volume, to achieve 80 percent or more volume treatment by the method recommended in California Storm Water Best Management Practices Handbook — Industrial/Commercial, (1993). Note that this handbook was replaced in Spring 2003 by a new handbook published by the California Association of Stormwater Quality Agencies (CASQA).

ii. Flow-based BMPs shall be designed to mitigate (infiltrate or treat) either:

   a) The maximum flow rate of runoff produced by the 85th percentile hourly rainfall intensity, as determined from the local historical rainfall record, multiplied by a factor of two; or

   b) The maximum flow rate of runoff, as determined from local historical rainfall records, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the $85^{th}$ percentile hourly rainfall intensity multiplied by a factor of two.

Additionally, Provision 19d allows the Permittees to propose alternative equivalent design criteria to that specified in the permit.

**Existing Design Criteria Used by the Permittees**

The Permittees currently require engineers and designers to use one of three different methods to design stormwater quality treatment control BMPs. Regional water quality detention basins are designed with the Sato Method (volume-based criteria). On-site stormwater quality treatment control BMPs are designed using either the volume-based or flow-based criteria, depending on type of BMP, as published in the *On-Site Manual*. Additionally, the City of Folsom has published supplementary design criteria for sizing

certain proprietary on-site BMPs. These methods are discussed below.

*Existing Design Criteria for Regional Water Quality Detention Basins*

Since the mid 1990's the City and County of Sacramento have been using a method for sizing stormwater quality detention basins originally documented in the *Optimization of Stormwater Quality Enhancement by Detention Basins for the Sacramento Metropolitan Area* (J.F. Sato and Associates 1991). Commonly referred to as the "Sato Method," it is based on an analysis of long-term precipitation records that approximates a continuous simulation model. Sato Method design curves were produced to allow an engineer to size a basin based on the amount of impervious area for the project.

The Sato Method criteria is described in several documents, including *Volume 2: Hydrology Standards of the City and County of Sacramento Drainage Manual (Hydrology Standards*) and the *City of Sacramento Utilities Procedures Manual* (Section 11). The design criteria has been used to design and construct numerous detention basins in the areas served by the City and County of Sacramento as well as those areas now served by the new cities of Elk Grove and Rancho Cordova. The City of Galt also uses the County's design criteria. The City of Folsom uses several design sources including the County's design criteria, the Spring 2003 CASQA Handbook, and additional criteria outlined in Section 10.17 (Water Quality Design) of the City of Folsom *Design and Procedure Manual and Improvement Standards.*

*Existing Design Criteria for On-Site Stormwater Quality Treatment BMPs*

The *On-Site Manual* includes numeric sizing criteria for various types of on-site treatment BMPs. Vegetated swales and filter strips are sized on the basis of water quality flow, which is defined as the peak flow of runoff from the two-year/six hour event using intensity-depth-frequency (IDF) curves published by the individual Permittees. The City and County of Sacramento IDF curves are included in the Volume 2 Hydrology Standards and the City of Folsom has produced its own unique curves, published in its *Design and Procedure Manual and Improvement Standards*. Other on-site stormwater treatment facilities (e.g., infiltration, sand filters) in the *On-Site Manual* are sized on the basis of water quality volume, defined as the first one-half inch of runoff from the contributing area connected to the treatment control BMP.

*Folsom Design Criteria for Proprietary BMPs*

In addition to using the *On-Site Manual*, Folsom has published design criteria for a proprietary device. In the City's *Design and Procedure Manual and Improvement Standards*, Section 10.17 (Water Quality Design) includes this criteria for pre-manufactured storm drain interceptors: "…interceptors shall conform to the City's Standard Drawing SD-42 for flows up to 3 cfs. For larger flows, the interceptor vault and plates/baffles shall be sized to accommodate capacity. All designs and calculations shall be reviewed and approved by the City. Unless approved by the City, multiple interceptors in series or parallel shall not be used."

**Comparison of Existing Design Criteria to Stormwater Permit Criteria**

The Permittees hired an experienced consultant team to conduct the studies and engineering analyses required to determine whether or not the existing numeric sizing criteria used in the Sacramento area are comparable to those in the Stormwater Permit. The results of this work are documented in Appendix F and briefly summarized in this section.

*Design Criteria for Regional Water Quality Detention Basins*

The Consultants' findings show that the Sato Method currently used by the Permittees to design and size regional water quality detention basins complies with the WEF/ASCE method specified in Permit Provision 19c.i.b and the CASQA Handbook method specified in Provision 19c.i.c.

*Design Criteria for On-Site BMPs (Volume-Based Criteria)*

The consultants' findings show that the *On-Site Manual's* volume-based criteria used to design and size certain on-site stormwater quality treatment BMPs complies with the WEF/ASCE method (Provision 19c.i.b) and the CASQA Handbook method (Provision 19c.i.c) for some

land-use conditions, but not all. During the update of the *On-Site Manual*, an updated design methodology would need to be utilized to completely satisfy the Stormwater Permit requirements.

*Design Criteria for On-Site BMPs (Flow-Based Criteria)*

The consultants' findings show that the *On-Site Manual's* flow-based criteria used to design and size certain on-site stormwater quality treatment BMPs complies with the flow-based 85$^{th}$ percentile method specified in Permit Provision 19c.ii.a. The method currently used is also consistent with the method recommended in the Spring 2003 CASQA Handbook.

## *Infiltration and Groundwater Protection (Provisions 19g)*

### Stormwater Permit Requirement

The Stormwater Permit (Provision 19g) requires the Permittees to apply restrictions to the use of infiltration BMPs to protect groundwater quality. The restrictions need to ensure that the use of infiltration BMPs will not cause a violation of applicable groundwater quality standards.

### Existing Infiltration and Groundwater Protection Restrictions

Infiltration BMPs are not commonly used in the Sacramento area, due to the prevalence of poor-draining clay soils. Also, infiltration facilities have a history of requiring more frequent maintenance to prevent clogging than other BMPs. These factors typically dissuade most local engineers from incorporating infiltration into their site designs. The *On-Site Manual* does allow the use of three types of infiltration BMPs: basins, trenches and paving blocks. The sections describing these techniques caution that the use of the devices could cause groundwater contamination. The following limitations are also noted:

- Cannot be used in areas with high ground water levels
- Cannot be used in high risk areas such as service/gas stations, truck stops, loading racks or heavy industrial areas (due to potential for pollutants to enter groundwater)
- Cannot be located in areas with groundwater quality concerns

In addition to the *On-Site Manual* restrictions, the Permittees implement and enforce various codes and policies related to protection of groundwater quality, as summarized in Appendix D.

### Comparison of Existing Infiltration Restrictions with Stormwater Permit Requirements

The Permittees already restrict the use of infiltration BMPs to protect groundwater quality as required by Permit Provision 19g. However, the *On-Site Manual* does not restrict the use of unlined stormwater filters, such as vegetated swales. While these are not primarily infiltration devices, they do allow infiltration and therefore have the potential to impact groundwater quality.

## *Downstream Erosion (Provision 19h)*

### Stormwater Permit Requirement

Provision 19h of the Stormwater Permit requires the DSP to include any existing criteria or proposed modifications that are needed to ensure that discharges from new development and significant redevelopment address the potential for downstream erosion and protect stream habitat. The Permittees are required to consider the need for measures to control peak stormwater discharge rates, velocities, volumes and durations.

### Existing Measures to Prevent Downstream Erosion

When preparing drainage master plans, the Permittees use computer models to predict future runoff flows and velocities as a result of new development and establish requirements for detention basins and other infrastructure that will mitigate the expected increases. Developers are also required to estimate future flows and velocities and mitigate increases when planning drainage improvements for a new development project. These calculations are subject to review by the agency with jurisdiction. In addition, the Permittees currently implement and enforce various codes and policies related to prevention of downstream erosion, as summarized in Appendix D.

**Comparison of Existing Measures to Prevent Downstream Erosion with Stormwater Permit Requirements**

The Permittees address the Stormwater Permit requirements of Provision 19h to some degree, with the City of Folsom having the most comprehensive code language to address peak discharge rates, velocities, volumes and durations. In order to help determine if the existing standards documented in Appendix D are "protective of downstream creek stability and habitat" as required by the Permit, the Permittees will initiate an erosion potential study in 2004. It is anticipated that the study will recommend strengthening the Permittees' codes if necessary to protect downstream resources from erosion. This is discussed further in Chapter 6.

## *Maintenance Agreement and Transfer (Provision 10g and 22)*

**Stormwater Permit Requirements**

*Regional Water Quality Detention Basins*

Stormwater Permit Provision 10g requires the Permittees to prepare and implement guidelines for operating and maintaining detention basins within their respective jurisdictions. These guidelines shall consider, at a minimum, the following: (1) inspection frequency; (2) maintenance frequency for removal of accumulated sediment, trash and debris; and (3) maintenance and stabilization of basin side slopes to prevent erosion and incorporation of additional sediment into outflow.

*On-Site Stormwater Quality Treatment BMPs*

Stormwater Permit Provision 22 specifies that each permittee shall require verification of maintenance provisions for structural and treatment control BMPs required of new and redevelopment projects. Verification shall include one or more of the following as applicable:

a) The developer's signed statement accepting responsibility for maintenance until the maintenance responsibility is legally transferred to another party; or

b) Written conditions in the sales or lease agreement that require the recipient to assume responsibility for maintenance; or

c) Written text in project conditions, covenants and restrictions for residential properties assigning maintenance responsibilities to a home owner's association, or other appropriate group, for maintenance of structural and treatment control BMPs; or

d) Any other legally enforceable agreement that assigns responsibility for maintenance of structural or treatment control BMPs.

**Existing Requirements for BMP Maintenance**

Currently, maintenance programs and requirements vary among the Permittees and also vary depending on the type of BMP, as described below. All the Permittees have inventories of the BMPs in their jurisdictions, as shown on Table 5–1. Such inventories are critical for developing and overseeing effective maintenance programs.

*Regional Water Quality Detention Basins*

Following their construction and acceptance by the municipality, regional water quality detention basins within the public right of way become the responsibility of the municipality. They are typically operated and maintained according to schedules established for the stormwater drainage system as a whole. Some Permittees have written maintenance guidelines for regional detention basins, and others conduct maintenance more informally.

For the past six years, the County has been studying sediment accumulation and maintenance needs associated with seven basins in the southern part of the County (some areas now served by Elk Grove). The intent of the study is to track the accumulation of certain pollutants in basin sediments and based on that, recommend sediment cleanout frequencies so that materials can be safely disposed of in a local municipal landfill. As required by the Stormwater Permit (Provision MRP III.A), this study will continue through 2004 and a final report will be developed thereafter. All of the Permittees will use the report findings to determine if changes are needed to their individual maintenance programs.

*On-Site Stormwater Quality Treatment Control BMPs*

The *On-Site Manual* describes the long-term operation and maintenance needs of the on-site

stormwater BMPs presented in the document. That information helps the property owner and his/her engineer or designer select the most appropriate BMPs for a project. The County and cities of Elk Grove and Sacramento currently require maintenance agreements for the following types of on-site BMPs constructed in multi-family residential, commercial, or industrial areas: infiltration BMPs, sand filters, and all types of proprietary BMPs (see list in Table 5–1).

The maintenance agreement is signed by the property owner or his/her designee (e.g., property manager) and recorded with the deed for the property, so that the maintenance requirements remain in effect even if the property changes ownership. The other Permittees (Citrus Heights, Folsom and Galt) do not currently require agreements for these types of on-site stormwater BMPs.

The cities of Sacramento and Folsom have permitted the construction of a few on-site water quality detention basins and those are maintained by the property owner, homeowners' associations or special districts, such as a lighting and landscaping district.

Agreements are not currently required for vegetated BMPs since these aboveground facilities are typically part of a site's landscaping and are maintained routinely for aesthetic and drainage purposes.

#### Comparison of Existing Maintenance Requirements with Stormwater Permit Requirements

*Regional Water Quality Detention Basins*

Some, but not all, of the Permittees have written detention basin maintenance plans and/or guidelines for field maintenance crews. The City of Sacramento has developed maintenance plans for its basins in the North Natomas area. The County has developed an inspection/maintenance checklist for its basins. For those Permittees without a formal inspection plan/schedule for the basins, the facilities are inspected by crews conducting work on upstream or downstream portions of the stormwater drainage system on an as-needed basis. The Permittees are waiting for the results of the County's detention basins sediment study (2004–5) to determine the optimum schedules for cleaning out and disposing of accumulated sediments. Field crews may conduct tasks to maintain and stabilize basin side slopes to prevent erosion, but this is currently done on an as-needed basis in problem areas as warranted by visual observations, rather than as a routine maintenance task.

*On-Site Stormwater Quality Treatment Control BMPs*

Some of the Permittees partially meet the Stormwater Permit Provision requiring maintenance for on-site BMPs. For example, the requirements of the County and cities of Elk Grove and Sacramento satisfy Provision 22d for infiltration BMPs, sand filters, and proprietary BMPs, where maintenance agreements are recorded with the property deed. The City of Folsom is fulfilling the permit requirement (using the option in Provision 22c) with respect to on-site water quality detention basins in residential subdivisions that are maintained under agreement by the homeowners' association or a special district.

All the Permittees need to amend their existing maintenance programs to fully meet the Stormwater Permit requirements; the proposed amendments are discussed in Chapter 6.

## *CEQA Review Procedures (Permit Provision 23)*

#### Stormwater Permit Requirements

Provision 23 of the Stormwater Permit requires each Permittee to incorporate into its CEQA process, within 180 days of the Permit's effectiveness date, procedures for considering potential storm water quality impacts and providing for appropriate mitigation when preparing and reviewing CEQA documents. The permit was effective January 25, 2003, making the deadline for this CEQA update task July 24, 2003.

#### Existing CEQA Review Procedures

Potential impacts to stormwater runoff and receiving water quality have long been a consideration by the Permittees during the CEQA review process. However, the Stormwater Permit goes a step farther in requiring the Permittees to consider additional, perhaps more specific, water quality protection principles outlined in Permit

Provision 23, such as 23c: "[Consider the] Potential for discharge of stormwater from material storage areas, vehicle or equipment fueling, vehicle or equipment maintenance, …or other outdoor work areas".

To address this requirement, the Permittees worked with their planning and environmental review staff during summer 2003 to amend their CEQA review procedures and Initial Study checklists. Some of the agencies also amended standard conditional language used by the planners to prepare environmental impact reports (EIRs) and other environmental documents. Copies of these materials were, or will be provided, in the individual Permittee Annual Reports.

## *General Plan (Permit Provision 24)*

### Stormwater Permit Requirements

Provision 24 of the Stormwater Permit requires each Permittee to evaluate and amend, revise, or update as necessary, its General Plan to include watershed and storm water quality and quantity management considerations and policies when any of the following General Plan elements are updated or amended: land use, housing, conservation, and open space. Additionally, Permitees are required to provide the Regional Board with the draft amendment or revision when a listed General Plan element or the General Plan is noticed for comment in accordance with California Government Code § 65350 *et seq*.

### Status of General Plan Updates for Permittees

The cities of Citrus Heights, Elk Grove and Rancho Cordova adopted the County's General Plan upon incorporation. The cities of Sacramento, Folsom and Galt have their own unique General Plans. All of the existing General Plans include language addressing water quality and receiving water protection in the Conservation Element.

The City of Elk Grove recently adopted a new General Plan on November 19, 2003. During that process, steps were taken to incorporate water quality principles and concepts specified in this Stormwater Permit. The other five permittees have recently begun, or are about to embark, on the process to update their General Plans. This work is described in Chapter 7.

## *Technical Guidance and Information for Developers (Permit Provision 26)*

### Stormwater Permit Requirement

Permit Provision 26b requires that within one year of adopting development standards, each Permittee shall issue new or amended technical guidance manuals to the development community in that Permittee's jurisdiction for the siting and design of storm water quality BMPs. The technical manual(s) shall at a minimum include:

i. Source and treatment control BMP design criteria for BMPs acceptable for use in the local area;

ii. Peak flow control criteria to control peak discharge rates, velocities and duration;

iii. Expected pollutant removal performance ranges for the BMPs (or references to national databases, technical reports and/or scientific literature); and

iv. Maintenance considerations.

### Existing Technical Guidance Manual

The City and County of Sacramento published the *On-Site Manual* in January 2000 as technical guidance for the development community. The manual is also used by the other Permittees. It is made widely available in electronic form through the City and County of Sacramento's web sites and a hard copy can be purchased from the City in person or through the mail.

### Comparison of Existing *On-Site Manual* to Stormwater Permit Requirements

The existing *On-Site Manual* satisfies Permit Provisions 26.b.i and iv, related to source/treatment control BMP design criteria and maintenance considerations, respectively. It does not currently address peak flow criteria or expected pollutant removal performance ranges for BMPs. Also, it does not include design criteria for regional water quality detention basins; this criteria is currently contained in separate documents. These issues will be addressed with the proposed update of the *On-Site Manual* discussed in the next chapter. Since the updated manual will contain the amended development standards required by the Stormwater Permit, the document is proposed for completion within one year of approval of the DSP by the Regional Board.

## Chapter 6

# Proposed Amendments to Key Development Standards

Provision 17c of the Stormwater Permit requires that the DSP include "a description of the proposed modifications to the Development Standards to ensure that, at a minimum, they are consistent with the requirements of State Board Order WQ 2000-11 and this Order (the Stormwater Permit)". As stated previously, the applicable requirements of WQ 2000-11 were incorporated into the Sacramento Stormwater Permit adopted by the Regional Board in December 2002. Therefore, addressing the permit requirements also satisfies WQ 2000-11.

This chapter outlines proposed amendments to the Permittees' key development standards needed to comply with the Stormwater Permit, based on the comparisons to the permit requirements made in Chapter 5. The recommendations are subject to change based on comments received during the Regional Board's public review process, which is anticipated to take place in 2004.

Chapter 7 proposes additional amendments to other development standards to protect water quality which were not specifically required for inclusion in the DSP, but are included in this document for completeness.

## Proposed Amendments Applicable to All Permittees

### *Update* On-Site Manual *(Create New Countywide Stormwater Procedures and Design Manual)*

The Permittees plan to update the existing *City and County of Sacramento Guidance Manual for On-Site Stormwater Quality Control Measures* (the *On-Site Manual*) and are considering renaming it the *Sacramento Stormwater Management Program Procedures and Design Manual for Stormwater Quality BMPs* (*Stormwater Design Manual*) or something similar. The *Stormwater Design Manual* will apply throughout the county to promote consistency among the stormwater requirements of the various Permittees. It will serve as the main tool for ensuring that projects in the eight priority development project categories specified in the Stormwater Permit are required to include stormwater quality controls.

The Permittees plan to work together to create the updated document. A steering committee will likely be formed to guide this and future updates, and a development advisory committee may also be formed. Model manuals from other communities such as Atlanta, Georgia; Portland, Oregon; and Ventura, California will be reviewed for presentation and content ideas, and cross references will be made to the new 2003 California BMP Handbook for Development published by CASQA. The target date for completing the *Stormwater Design Manual* is one year following adoption of the DSP by the Regional Board. This schedule is discussed more in Chapter 8.

The following is a preliminary list of proposed changes to the *On-Site Manual*:

- Change name to *Sacramento Stormwater Management Program Procedures and Design Manual for Stormwater Quality BMPs* or something similar
- Include contact information for all the Permittees
- Incorporate relevant standards and design criteria for regional detention basins so that all stormwater quality design information applicable to the post-construction phase of development and redevelopment projects is in a single document
- Update the numeric sizing criteria as recommended in Chapter 6 and Appendix F

- Include a definition for "significant redevelopment" consistent with the Stormwater Permit
- Include a BMP decision matrix to guide agency and private sector designers in the selection of appropriate BMPs for the land use and pollutants of concern applicable to the project

  Table 6–1 (presented later in this chapter) presents a conceptual matrix that is currently being considered by the Permittees; it is subject to revision until the manual is complete. This matrix (or some version of it) will likely replace Table 2–1 in the existing manual to clarify how the BMP requirements apply to the eight priority project categories listed in Stormwater Permit Provision 19a (see more details in the next section).
- Add recommendations related to general site design principles such as promoting watershed-based planning concepts; protecting natural areas, slopes and channels; controlling peak runoff rates; and minimizing impervious area
- For clarity, add groundwater protection language to the information presented for vegetated swales and any other BMPs found to have the potential to introduce pollutants to groundwater

## *Proposed Amendments to Address Priority Project Categories*

This section describes proposed amendments to the *On-Site Manual* (which will be renamed, as noted above) to address the priority development project categories listed in Provision 19a of the Stormwater Permit.

**Residential Subdivisions: Single Family Residential (Permit Provision 19a.i)**

The Permittees plan to continue to distinguish between single family residential and multi-family residential projects and set unique requirements for each, even though the Stormwater Permit does not require this. Pollution prevention and BMP strategies for the two types of land uses can be very different.

The Permittees are considering amending the *On-Site Manual* to lower the threshold for requiring treatment control BMPs for single family subdivisions. Some Permittees already do this in practice. Treatment control BMPs may be required of all mid-size subdivisions (20-25 acres) — not just all those over 100 acres, as is currently the case.

The Permittees would like to continue to base the requirement for treatment control BMPs on the gross acres of a single family subdivision, rather than the number of units (10), which is the threshold used by the Permit to define priority residential projects subject to source and/or treatment control BMPs. In Sacramento, gross size is probably a better threshold than the number of lots, due to the variations in lot sizes, particularly with rural agricultural land uses (single family residential lots of 1, 2 and 5 acres each) in the eastern part of the county.

**Residential Subdivisions: Multi Family Residential (Permit Provision 19a.i)**

No changes are needed to the *On-Site Manual* to bring the current requirements into conformance with the Stormwater Permit. However, the Permittees plan to consider changing the threshold for when multi-family residential projects need treatment control BMPs from one acre of gross area, to ten units. This would make the treatment BMP trigger identical to the threshold used in the Stormwater Permit to define priority residential projects subject to source and/or treatment control BMPs. All projects would continue to require source control BMPs at a minimum, using the applicable source control fact sheets in the *On-Site Manual*.

**Commercial Developments (Permit Provision 19a.ii)**

The Permittees propose to amend Table 2–1 in the *On-Site Manual* to include rooftop runoff in the calculation of impervious area for the purposes of determining whether or not a site is required to include stormwater treatment BMPs. No additional amendments are proposed, since the existing development standards exceed the Stormwater Permit requirements for this land use category.

**Automotive Repair Shops (Permit Provision 19a.iii)**

The Permittees will add a separate category for auto repair shops to the *On-Site Manual* rather than continue to address them in the same way as all commercial projects. The Permittees plan to keep the current threshold for automatically requiring treatment control BMPs for automotive repair shops with one acre or more of impervious area, but will begin including roof top area in the calculation of impervious area.

The BMP matrix (Table 6–1) that is proposed to be added to the *On-Site Manual* will prohibit the use of selected infiltration and filtration BMPs at automotive repair shop sites, due to the potential for hydrocarbons and other pollutants to migrate to groundwater.

Also, the Permittees will consider whether it would be beneficial to create new source control fact sheets for additional activities that have the potential to pollute runoff. It should be noted that the Permittees' industrial inspection programs control and issue enforcement actions related to pollutant generating activities (e.g. power washing pavement and allowing polluted runoff to enter storm drain inlets) at auto repair shops. Based on experience, the Permittees believe that focusing on the daily operational aspects of these facilities and promoting education will do more for protection of water quality than new development requirements.

**Restaurants (Permit Provision 19a.iv)**

The Permittees will add a separate category for restaurants to the *On-Site Manual* rather than continue to address them in the same way as all commercial projects. The Permittees plan to keep the current threshold for automatically requiring treatment control BMPs for restaurants with one acre or more of impervious area, but will begin including roof top area in the calculation of impervious area.

They will consider making a stronger requirement for connecting trash enclosure drains to a dead end sump or the sanitary sewer system. Currently this is only a recommendation in the source control fact sheet for waste handling. Finally, the Permittees will consider whether it would be beneficial to create new source control fact sheets for additional activities that have the potential to pollute runoff. It should be noted that the Permittees' industrial inspection programs control and issue enforcement actions related to pollutant generating activities at restaurants. As with auto repair shops, the Permittees believe that focusing on the daily operational aspects of restaurants and promoting education will do more for protection of water quality than new development requirements.

**Hillside Developments (Permit Provision 19a.v)**

This requirement is adequately addressed by the City of Folsom and does not apply to the other Permittees. Additionally, the proposed BMP matrix (Table 6–1) prohibits/limits the use of certain BMPs in areas with a slope greater than 25%.

**Parking Lots (Permit Provision 19a.vi)**

The Permittees will consider the following changes to the *On-Site Manual*:

- Clarify that parking lots associated with buildings and facilities are covered by the requirement applicable to that land use category
- Include a new category in the Design Manual for parking lots exposed to rainfall that are not associated with a commercial, industrial or multi-family residential project and are 5,000 square feet or more in size, or contain 25 or more parking spaces

**Streets, Roads and Highways (Permit Provision 19a.vii)**

The Permittees propose to change the *On-Site Manual to*:

- Clarify that runoff from roads associated with new residential, commercial and industrial land uses should be treated per the requirements for the applicable land use.
- Add requirements for development of public road capital projects and redevelopment of existing roads (e.g., widening) that adds five or more acres of new impervious surface

**Retail Gasoline Outlets (RGOs) (Permit Provisions 19a.viii., 19b)**

The Permittees will add a separate category for RGO's to the *On-Site Manual* rather than continue to address them in the same way as all commercial projects. The Permittees plan to keep the *On-Site Manual* current threshold for requiring treatment control BMPs for RGOs with one acre or more of impervious area, but will begin including roof top area in the calculation of impervious area. The BMP matrix (Table 6–1) that is proposed to be added to the *On-Site Manual* will prohibit the use of selected infiltration and filtration BMPs at RGO sites, due to the potential for hydrocarbons and other pollutants to migrate to groundwater. The current *On-Site Manual* source control fact sheet for fueling operations specifies that the fueling area must be covered with a concrete pad and "may be required" to drain to a dead end sump or to the sanitary sewer. The Permittees plan to consider making this an automatic requirement rather than a recommendation.

The Permittees' industrial inspection programs are designed to control pollutant generating activities (e.g. power washing pavement and allowing polluted wash water to enter storm drain inlets) at RGOs. Based on experience, the Permittees believe that focusing on the daily operational aspects of RGOs (e.g., power washing) and promoting education about source controls has the potential of protecting water quality as much or more than new development structural BMP requirements alone.

## *Proposed Amendments Related to BMP Selection Criteria*

The BMP selection matrix presented in Table 6–1 is being considered for inclusion into the updated *On-Site Manual* (which will be renamed the *Stormwater Design Manual,* as noted previously). The matrix is subject to revision until the final manual is published. Table 6–1 is intended to provide agency planners and engineers, as well as development and design professionals, with a user-friendly tool to help select the most appropriate BMPs for a development project given the land use and expected pollutants. The matrix includes consideration of the Sacramento target pollutants (which currently include diazinon, chlorpyrifos, lead, copper, mercury, and coliform/pathogens). This information will be updated as the target pollutant list evolves.

Information about various BMPs' relative effectiveness at removing pollutants may also be added to the manual and updated over time to reflect the evolving state of the practice and knowledge about BMPs.

## Table 6–1. Conceptual BMP Selection Matrix for Priority Development Project Categories

| Priority Development Project Category | Source Control BMPs | | | | | | | Treatment Control BMPs (select one) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Storm Drain Message and Signage | Outdoor Material Storage | Waste Handling | Outdoor Material Loading/unloading | Vehicle/Equipment Repair/ maintenance/washing | Outdoor Process Equipment Operations and Maintenance | Vehicle and Equipment Fueling | Threshold | Vegetative Filter Strip | Vegetative Swale | Dry Extended Detention Basin | Wet Detention Basin | Constructed Wetland (a) | Media Filtration/Sand Filter (a) | Porous Pavement Detention | Porous Landscape Detention | Infiltration Basin | Infiltration Trench | Alternative and Proprietary Controls (b) | Proof of BMP Maintenance |
| Residential (Single Family) | ✓ | NA | NA | NA | NA | NA | NA | > 20 ac | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Residential (Multi-Family) | ✓ | NA | ✓ | NA | ✓ | NA | NA | ≥ 1 ac | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Commercial Developments | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | impervious area ≥ 1 ac | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Automotive Repair Shops | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | impervious area ≥ 1 ac | NA | NA | NA | NA | NA | ● | NA | NA | NA | NA | ● | ● |
| Retail Gasoline Outlets | ✓ | ✓ | ✓ | NA | ✓ | NA | ✓ | impervious area ≥ 1 ac | NA | NA | NA | NA | NA | ● | NA | NA | NA | NA | ● | ● |
| Restaurants | ✓ | ✓ | ✓ | ✓ | ✓ | NA | NA | impervious area ≥ 1 ac | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Hillside Developments | ✓ | (c) | (c) | (c) | (c) | (c) | (c) | ≥ 25% slope | NA | NA | ● | ● | ● | ● | NA | NA | NA | NA | ● | ● |
| Parking Lots (d) | ✓ | NA | NA | NA | NA | NA | NA | ≥ 5,000 sf or 25 spaces | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Street/Roads | ✓ | NA | NA | NA | NA | NA | NA | impervious area ≥ 5 ac | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Industrial Development (e) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | impervious area ≥ 1 ac | ● | ● (f) | ● (f) | ● (f) | ● (f) | ● | ● (f) | ● (f) | ● (f) | ● (f) | ● | ● |

✓ = Required if applicable to project
● = Acceptable
(a) = Pretreatment highly recommended
(b) = Use only on a case-by-case basis with local agency approval or in combination with other applicable treatment control measures
(c) = Depends on type of land use (commercial, multi-family, residential, etc.)
(d) = Stand-alone parking lots only. Parking lots associated with buildings/facilities need to meet requirement of associated land use (commercial, industrial, etc.)
(e) = Facility will likely require coverage under State's NPDES General Permit for Stormwater Discharges Associated with Industrial Activity
(f) = May be allowed to treat employee/customer vehicle parking lot runoff only
NA = Not Applicable or Not Allowable

### *Proposed Amendments Related to Numeric Sizing Criteria for Stormwater Quality Treatment Control BMPs*

The technical consultants' findings documented in Appendix F and summarized in Chapter 5 show that the Permittees' existing methods for designing regional water quality detention basins and flow-based on-site stormwater quality treatment control BMPs are consistent with the design criteria specified in the Stormwater Permit. However, the volume-based criteria currently used to design certain on-site stormwater quality treatment BMPs does not comply with the Permit for certain land-use conditions. Therefore, changes will be made to the volume-based criteria in the *On-Site Manual* during the process to update the manual.

Alternatively, the Permittees may use the Spring 2003 CASQA Handbook methods for design of all types of stormwater BMPs, as recommended by the consultants. Details about that recommendation can be found in Appendix F.

### *Proposed Amendments Related to Infiltration and Groundwater Protection Requirements*

The Permittees will consider amending the *On-Site Manual* so that restrictions designed to protect groundwater quality apply to filtration facilities that can allow infiltration, such as vegetated swales. The restrictions already apply to BMPs that are designed with infiltration as their primary function.

### *Proposed Amendments for Controlling Downstream Erosion and Protecting Stream Habitat*

As explained in Chapter 5, the Permittees partially meet the Stormwater Permit requirements for controlling downstream erosion, with the City of Folsom having the most comprehensive code language to address peak discharge rates, velocities, volumes and durations. The other Permittees will review Folsom's language and consider improvements to their own codes as needed. The new *Stormwater Design Manual* (which will replace the *On-Site Manual*) might also include design information for BMPs to ensure that discharges from the outlet of the BMP do not create downstream erosion problems.

In addition, the Permittees will initiate an erosion potential study in 2004 to comply with Stormwater Permit Provision MRP III. This work will help determine whether or not the existing standards are sufficiently protective of downstream creek stability and habitat. It is anticipated that the study will also provide additional recommendations for strengthening the Permittees' codes to protect downstream resources from erosion.

### *Proposed Amendments Related to Maintenance of Stormwater Quality Treatment BMPs*

The Permittees are proposing several tasks to fully satisfy the Stormwater Permit requirements. They will work together to update the *On-Site Manual* to expand the information related to maintenance requirements for various types of BMPs. Additionally, each Permittee will update or develop maintenance requirements specific to its jurisdiction related to regional facilities (e.g., water quality detention basins) and on-site stormwater quality treatment BMPs, to satisfy Permit Provisions 22.

## Proposed Amendments Applicable to Individual Permittees

This section describes proposed amendments to existing codes and standards that are needed by each Permittee in order to implement the new *Stormwater Design Manual* (the revised *On-Site Manual*) discussed in the preceding section. These amendments will satisfy the Stormwater Permit DSP requirements and provide the necessary legal authority to require the development community to comply with the requirements in the new manual. Unless stated otherwise, the proposed target date for making the noted amendments is one year following adoption of the DSP by the Regional Board; this is reflected in the schedule shown in Chapter 8.

Chapter 7 presents additional development standard amendments (e.g., General Plan updates, amendments to municipal and zoning codes, etc.) being considered by the Permittees to address water quality and watershed protection principles. Those additional amendments are generally on a longer timetable than those discussed in this chapter.

# County of Sacramento and Cities of Citrus Heights, Elk Grove and Rancho Cordova

The following proposed amendments apply to the unincorporated County and the Cities of Citrus Heights, Elk Grove and Rancho Cordova, since these cities adopted the County's Municipal Code and Improvement Standards upon incorporation.

## *Municipal Code (Sacramento County Code), Chapter 15.12 (Stormwater Ordinance)*

Amend the Stormwater Discharge and Management Ordinance as follows:

- Add provision authorizing the Water Resources Director or their designee to establish requirements for new and significant redevelopment
- Define "significant redevelopment" to be consistent with the Stormwater Permit
- Reference the new *Stormwater Design Manual* (update of existing *On-Site Manual*; discussed previously in this chapter) and eliminate references to outdated design and guidance documents

## *Volume 2 of City/County Drainage Manual (Hydrology Standards)*

Remove design information related to sizing water quality detention basins when the new *Stormwater Design Manual* (update of existing *On-Site Manual*) is published. Currently, changes to the Hydrology Standards need to be approved and adopted by the Board of Supervisors.

## *Improvement Standards*

Reference the new *Stormwater Design Manual* and eliminate references to outdated design and guidance documents. Currently, changes to the Improvement Standards need to be approved and adopted by the Board of Supervisors.

# City of Sacramento

## *Volume 2 of City/County Drainage Manual (Hydrology Standards)*

Work with County to remove or revise design information related to sizing water quality detention basins. Permittees are considering incorporating regional water quality control criteria in the new *Stormwater Design Manual* (update of existing *On-Site Manual*).

## *City of Sacramento Utilities Procedure Manual*

Remove and/or revise regional water quality design criteria when the new *Stormwater Design Manual* (update of existing *On-Site Manual*) is published.

## *Standard Conditions*

Revise standard conditions to reflect proposed changes for BMP implementation and add maintenance requirements.

# City of Folsom

## *Folsom Municipal Code*

Amend Chapter 8.70 (Stormwater Discharge and Management Ordinance) to better address new development and significant redevelopment.

## *City of Folsom Design and Procedure Manual and Improvement Standards*

Provide reference to new *Stormwater Design Manual* (update of existing *On-Site Manual*) and eliminate references to outdated design and guidance documents.

### *Standard Conditions*

Consider amendments to the standard conditions to better address BMP implementation and maintenance requirements and reflect the new *Stormwater Design Manual.*

## City of Galt

### *Galt Municipal Code*

Amend Chapter 16.10 the (Stormwater Ordinance), Section 120 with the following language or similar: "…the City may require, in its discretion, new development or redevelopment projects to implement designs, which minimize stormwater runoff."

### *Improvement Standards*

Reference the new *Stormwater Design Manual* (update of existing *On-Site Manual*) as part of the City's Improvement Standards.

Chapter 7

# Proposed Amendments to Other Development Standards

Chapter 6 described proposed amendments to key development standards to comply with the Stormwater Permit requirements. This chapter describes additional proposed amendments that are being considered by the Permittees to address water quality and watershed protection. The proposed amendments were not specifically required for inclusion in the DSP and are subject to change until they are formally adopted or otherwise approved by the Permittees.

The amendments proposed in this chapter are based on the review and evaluation of existing development standards completed by each Permittee, as documented in Appendix D. It should be noted that Stormwater Permit Provision 16a states that in reviewing and updating its water quality and watershed protection principles and policies, the Permittees shall "consider" the principles outlined in Provision 16a.i – viii. All of the Permittees made these considerations, but are not required by the Permit to modify plans and policies to address each and every principle.

## County of Sacramento and City of Rancho Cordova

The following proposed amendments apply to the unincorporated County and the City of Rancho Cordova, since the city adopted all of the County's plans, codes and standards when it incorporated in July 2003. The city may elect to amend this portion of the DSP when they achieve permittee status.

### *General Plan*

The County recently initiated a process to update its 1993 General Plan. During the process, which is expected to take two or more years, the County will consider the need to integrate the water quality and watershed protection principles outlined in the Stormwater Permit (Provision 16a). The current General Plan addresses the principles to a degree through stormwater quality policies contained in CO –9, 10 and 12 of the Conservation Element, but updates will be considered. As required by the permit (Provision 24), the County will also review the Land Use, Housing and Open Space Elements for references to water quality protection goals, and identify any necessary updates. The County will work with the other Permittees embarking on General Plan updates and will consider example General Plan language used by other communities, as described in Appendix D.

### *Community and Specific Plans*

The County will consider including appropriate water quality protection language in future community and specific plans and will consider example language used by other agencies in their community/specific plans, as described in Appendix D.

### *Design Guidelines for Commercial Development*

The County is preparing design guidelines for commercial developments in the unincorporated areas and will integrate water quality protection principles as appropriate. The public review process is projected to begin in late 2003.

### *Zoning Code*

The County will consider amendments to the following chapters and articles of Title III of the Zoning Code (Use Regulations and Development Standards) to integrate water quality concepts and eliminate potential conflicts with stormwater requirements:

**Chapter 1** – General Provisions

**Chapter 5** – Residential Use Development Standards

**Chapter 15** – Commercial Uses

**Chapter 25** – Industrial Development Standards

**Chapter 30** – Off Street Parking

**Chapter 40** – Automobile Service Station

### *Land Grading and Erosion Control Ordinance*

The County anticipates updating the Land Grading and Erosion Control Ordinance (Chapter 16.44 of County Code) as follows:

- Update references to latest State NPDES General Permit for Construction Activities (2003)
- Update references to erosion and sediment control specifications
- Consider the need for distinguishing better between County-required erosion and sediment control plans and State-required stormwater pollution prevention plans (SWPPPs)

### *Water Use and Conservation Ordinance*

The County will review the Water Use and Conservation Ordinance (County Code Chapter 14.10) and will:

- Consider revisions as needed to any language that potentially conflicts with stormwater quality protection objectives
- Consider amending the County's recommended plant and tree list (County Code Chapter 14.10.080) to include species that are appropriate for use with vegetated stormwater quality treatment BMPs

### *Requirements for Controlling Downstream Erosion and Protecting Stream Habitat*

Upon completion of the Permittee's Erosion Potential Study (Stormwater Permit Provision MRP III), the County will consider whether new requirements are needed to protect stream habitat from erosion.

## City of Sacramento

### *General Plan*

The City of Sacramento General Plan is strongly oriented toward physical development of land uses, the circulation network, and supporting facilities and services. Conformance of proposed projects and improvements with the General Plan is a major step toward their approval. The current 1986 to 2006 General Plan replaced the extensively amended 1974 General Plan. In October 2003, the City began the process of updating the General Plan; adoption of the new plan is anticipated in 2006. During the update process, water quality and watershed protection principles will be addressed as necessary. The City will consider example language used by other agencies in their General Plans, as described in Appendix D.

### *Community and Specific Plans*

The City will consider including appropriate water quality protection language in new and updated community and specific plans. The community plans tentatively scheduled for updates include: the Airport-Meadowview/South Sacramento Community Plan in 2004 and the North Sacramento Community Plan in 2006. The City will consider example language used by other agencies in their community plans, as described in Appendix D.

### *City Code*

Currently, the City's Stormwater Ordinance provides the legal authority to require stormwater quality requirements for new development and redevelopment. Based on the City's initial review, no City codes were identified for revision. The City will consider including appropriate water quality protection language in various portions of the City code as deficiencies or conflicts are identified. The City will consider example language used by other agencies in their codes, as described in Appendix D.

### *Requirements for Controlling Downstream Erosion and Stream Habitat*

Upon completion of the Permittee's Erosion Potential Study (Stormwater Permit Provision MRP III), the City will consider whether new requirements are needed to protect stream habitat from erosion.

## City of Citrus Heights

### *General Plan*

The City of Citrus Heights adopted the 1993 County General Plan when it incorporated in 1997. The City is about to embark on a process to prepare its own General Plan. It is anticipated that many of the revisions will be consistent with those proposed for the updated County General Plan. During the process, the City will consider ways to integrate the water quality and watershed protection principles outlined in the Stormwater Permit.

### *Zoning Code*

The City adopted the County Zoning Code when it incorporated in 1997 and will consider any amendments necessary, consistent with any changes the County makes to the zoning code, as described above.

### *Municipal Code*

The City adopted the County's Municipal Code when it incorporated in 1997. To be consistent with Sacramento County, the City will consider amending various parts of the Municipal Code, including the Land Grading and Erosion Control Ordinance (16.44 of the Municipal Code) and the Water Use and Conservation Ordinance (14.10 of the Municipal Code).

### *Requirements for Controlling Downstream Erosion and Stream Habitat*

Upon completion of the Permittee's Erosion Potential Study (Stormwater Permit Provision MRP III), the City will consider whether new requirements are needed to protect stream habitat from erosion.

## City of Elk Grove

### *General Plan*

The City recently completed a two-year process to develop its own General Plan and adopted the new plan on November 19, 2003. Under contract to the City, the County provided consulting services in spring 2003 to review and comment on the Conservation, Land Use, Open Space and Housing Elements of the General Plan, and recommended ways to integrate the water quality and watershed protection principles found in the Stormwater Permit. These recommendations were considered by the City planners and appropriate concepts were included in the final General Plan. No further updates are planned in the near future.

### *Community and Specific Plans*

The City will consider including appropriate water quality protection language in future community and specific plans and will consider example language used by other agencies in their community/specific plans, as described in Appendix D.

### *Design Guidelines for Multi-Family Residential Development*

The City of Elk Grove adopted design guidelines for single family residential subdivisions and commercial developments in 2003. Efforts were made to consider and integrate, as feasible, the water quality and watershed protection principles outlined in the Stormwater Permit. For example, to address Permit Provision 16a.i related to minimizing impervious surfaces in new and redevelopment, the design guidelines include a policy statement that the City encourages the use of pervious and alternative pavements (V.A.2.17) and another policy that driveways should not dominate the front yard in residential subdivisions (III., B, 2., 14).

Design guidelines for multi-family residential development are currently being drafted and are expected to be published in 2004. The planners will again consider and integrate water quality protection principles as appropriate.

### *Zoning Code*

The City of Elk Grove adopted the County Zoning Code when it incorporated in 2000. The City is planning to create and adopt its own zoning code in the near future and will consider amending the language in Title III (Use Regulations and Development Standards) to integrate water quality concepts and eliminate potential conflicts, as noted previously for the County.

### *Municipal Code*

The City adopted the County's Municipal Code when it incorporated in 2000. Like Sacramento County, the City will consider amending various parts of the Municipal Code, including the Land Grading and Erosion Control Ordinance (16.44 of the Municipal Code) and the Water Use and Conservation Ordinance (14.10 of the Municipal Code).

### *Requirements for Controlling Downstream Erosion and Stream Habitat*

Upon completion of the Permittee's Erosion Potential Study (Stormwater Permit Provision MRP III), the City will consider whether new requirements are needed to protect stream habitat from erosion.

## City of Folsom

### *General Plan*

Starting in about late 2004, the City of Folsom plans to update its current General Plan (which was last updated in 1993) and will incorporate water quality and watershed protection principles as needed.

### *Municipal Code*

City of Folsom planners will review and evaluate the need for amendments to the following chapters of the Folsom Municipal Code to integrate water quality concepts and eliminate potential conflicts:

**Chapter 14.29** – Grading

**Chapter 14.33** – Hillside Development Standards

**Chapter 17.57** – (Zoning Code) Parking Requirements

**Chapter 17.72** – (Zoning Code) Service Stations

### *Community and Specific Plans*

The City will consider including appropriate water quality protection language in community and specific plans for future development. This may include the area south of Highway 50 if the city annexes the area.

### *Requirements for Controlling Downstream Erosion and Stream Habitat*

Upon completion of the Permittee's Erosion Potential Study (Stormwater Permit Provision MRP III), the City will consider whether new requirements are needed to protect stream habitat from erosion.

## City of Galt

### *General Plan*

The City of Galt recently began the process to update their General Plan. The process is called "20/20: A Vision for the Future" and will include numerous community workshops. The City planners are aware of the requirement to incorporate water quality and watershed principles in the General Plan update and will coordinate with the other Permittees to share information.

### *Zoning Code*

The City will consider changes to its Zoning Code after reviewing changes proposed by the County to its zoning code, as described earlier in this chapter.

### *Municipal Code*

The City recently adopted changes to the Galt Municipal Code to include a Stormwater Ordinance (Chapter 16.10). Further changes will be considered after reviewing changes proposed by the County and other Permittees to their codes, as described earlier in this chapter.

## *Requirements for Controlling Downstream Erosion and Stream Habitat*

Upon completion of the Permittee's Erosion Potential Study (Stormwater Permit Provision MRP III), the City will consider whether new requirements are needed to protect stream habitat from erosion.

Chapter 8

# Development Standards Implementation Process

Stormwater Permit Provision 19f requires the DSP to describe the process used to implement development standards, including all proposed modifications to the process. Part of this requirement is satisfied by Chapters 3 and 4, which describe and illustrate the steps and tools in the development review process. Also, Chapter 5 describes the existing development standards, and Chapters 6 and 7 describe proposed amendments. This chapter presents the proposed implementation process and schedule for amending the key development standards as described in Chapter 6. Roles and responsibilities of the various municipal departments for the six Permittees are also identified.

## Proposed Implementation Process and Schedule for Amending Development Standards

Table 8–1 presents the Permittees' proposed tasks and schedule for amending their existing development standards as described in Chapter 6. The dates shown in the schedule are subject to change, based on the date of final DSP approval by the Regional Board.

## Responsibilities for Implementing and Amending Development Standards

Table 8–2 outlines the tasks involved in implementing and amending development standards and the roles and responsibilities of the various municipal departments of the six Permittee agencies.

## Table 8–1. Projected Development Standards Implementation Schedule

| Task | Schedule/Target Date |
|---|---|
| Submit Development Standards Plan (DSP) to Regional Board | December 1, 2003 |
| Regional Board reviews DSP and works with Permittees if needed to make changes before public review process | January – March, 2004* |
| 30-day Public Review Process for DSP (hosted by Regional Board, with mailings to their "interested parties" list and additional stakeholders identified by Permittees, if any) | April 2004* |
| Regional Board adopts DSP | June 1, 2004* |
| Each Permittee completes amendments to its development standards (codes, ordinances, standards) to enable them to:<br>1) require SWQ controls for new and redevelopment projects in 8 priority project categories,<br>2) apply a BMP matrix to aid with selection of BMPs (based on land use and activities/pollutants of concern), and<br>3) require developers to use specified volume and flow-based numerical design criteria for designing treatment BMPs | June 1, 2004 – June 1, 2005*<br>(Note: Permit requires this step to be completed 1 year following Regional Board adoption of DSP) |
| Prepare a new Sacramento Design Manual for Stormwater Quality Facilities (to replace existing *Guidance Manual for On-Site Stormwater Quality Control Measures* and incorporate criteria for regional BMPs) | June 1, 2004 – June 1, 2005*<br>(This process could start earlier, if more than 1 year is needed) |
| Development community is required to comply with new requirements (except if project was previously approved) | June 1, 2005* |

**Dates are approximate and will depend on actual date that Regional Board conducts public review process and officially adopts the DSP.*

## Table 8–2. Roles and Responsibilities for Implementing and Amending Development Standards

| Roles/Responsibilities | Permittee/Responsible Dept. | | | | | |
|---|---|---|---|---|---|---|
| | **Sac County** | **City of Sac** | **Citrus Hts** | **Elk Grove** | **Folsom** | **Galt** |
| Oversee compliance with development standard provisions in NPDES Permit | Dept. Water Resources/ SWQ Section | Utilities – WQ Section | General Services | Public Works | Public Works | Public Works, Building and Planning |
| Review site plans for conformance to General Plan, zoning and building requirements | Planning | Planning; Building; Utilities – WQ | Community Development — Planning and Building | Planning | Community Development | Public Works, Building and Planning |
| ***Plans, Policies and Guidelines*** | | | | | | |
| Manage/oversee General Plan update process. | Planning | Long-Range Planning | Community Development— Planning | Planning | Community Development | Planning |
| Oversee preparation and implementation of community, specific and natural area protection plans. | Planning | Long-Range Planning | Community Development — Planning | Planning | Community Development | Planning |
| Oversee preparation and implementation of master plans for parks and trails. | County Parks and various Parks Districts | Parks and Recreation | Sunrise Recreation and Parks District | EG Community Services District | Parks and Recreation | Parks and Rec and Planning |
| Prepare and implement drainage master plans | DWR/Drainage Dev. Review Section | Utilities | General Services | Public Works | Public Works and Community Development | Public Works |
| Prepare and update design guidelines | Planning | Planning | Community Development — Planning | Planning | Public Works and Community Development | Public Works and Planning |
| Manage and Implement CEQA review process, including oversight for EIR preparation | Dept. Env. Review & Assess. | Planning – Environmental Services | Community Development — Planning | Planning | Community Development | Planning |

| Roles/Responsibilities | Permittee/Responsible Dept. | | | | | |
|---|---|---|---|---|---|---|
| | **Sac County** | **City of Sac** | **Citrus Hts** | **Elk Grove** | **Folsom** | **Galt** |
| Review Specific Plans | Planning | Current and Long-Range Planning | Comm Dev — Planning, General Services | Planning | Community Development | Planning |
| ***Ordinances and Codes*** | | | | | | |
| Update zoning ordinance/code | Planning | Planning; Utilities – WQ | Community Development—Planning | Planning | Public Works and Community Development | Planning |
| Update stormwater ordinance | DWR/SWQ | Utilities – WQ | General Services | Public Works | Public Works | Public Works |
| Update grading ordinance (erosion control) | DWR/SWQ | Utilities – WQ | Community Development—Building | Multiple City Departments | Public Works | Public Works |
| Update other relevant ordinances as needed (e.g., water conservation) | Planning | Planning; Utilities – WQ | Community Development—Planning | Multiple City Departments | Public Works and Community Development | Public Works |
| Implement/enforce codes | Planning; Code enforcement; DWR; LDSIR | Planning; Building; Utilities – WQ; | Comm Dev — Planning, Building, Code Enforcement | Multiple City Departments | Neighborhood Services | Public Works, Building and Planning |
| ***Design and Improvement Standards and Manuals*** | | | | | | |
| Write and update design/improvement standards (including stormwater quality) for development projects | DWR/Drainage Dev. Review Section | Utilities – WQ; Devel. Review | General Services | Multiple City Departments | Public Works and Community Development | Public Works |
| Coordinate update of *Guidance Manual for On-Site SWQ Control Measures* | DWR/SWQ | Utilities – WQ; Devel. Review | General Services | Public Works | Public Works | Public Works |